MASSACHUSETTS
BAY
TRANSPORTATION
AUTHORITY

FTA GRANT MA-90-0305

CONTRACT SPECIFICATIONS
for
MBTA Contract No. A27CN02

LIGHT RAIL ACCESSIBILITY PROGRAM

BROOKLINE VILLAGE STATION & LONGWOOD STATION

BROOKLINE, MASSACHUSETTS

March, 2007

CONFORMED COPY

GANNETT FLEMING, INC.
150 WOOD ROAD
BRAINTREE, MA 02184

GENERAL TABLE OF CONTENTS

STANDARD SPECIFICATIONS	Pages
BIDDING AND CONTRACT REQUIREMENTS AND DIVISION 1 - GENERAL REQUIREMENTS. NOVEMBER 1983 (Available in separate volume)	
CONSTRUCTION. JANUARY 1980 (Available in separate volume)	
BID FORM	**1B TO 34B**
CONTRACT AND BOND FORMS	**1C TO 8C**
SUPPLEMENTARY CONDITIONS	**SC-1 TO SC-67**
CONSTRUCTION SPECIFICATIONS	**01010 TO 16500**

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

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MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

FTA Grant No. MA-90-0305

BID FORM

MBTA CONTRACT NO. A27CNO2

LIGHT RAIL ACCESSIBILITY PROGRAM

BROOKLINE VILLAGE STATION & LONGWOOD STATION

BROOKLINE

MASSACHUSETTS

March, 2007

GANNETT FLEMING, INC.

150 WOOD ROAD

BRAINTREE, MA 02184

TO: ALL PROSPECTIVE BIDDERS

FROM: CONTRACT ADMINISTRATION DEPARTMENT
MASSACHUSETTS BAY TRANSPORATION AUTHORITY

NOTE WELL:

PLEASE BE ADVISED THAT AN INFORMATIONAL BID FORM IS INCLUDED IN THE FRONT SECTION OF THE CONTRACT SPECIFICATIONS AND MUST NOT BE USED FOR BIDDING PURPOSES. BIDDERS MUST OBTAIN A PRE NUMBERED BID FORM.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY
TRANSPORTATION BUILDING
10 PARK PLAZA
BOSTON, MASSACHUSETTS 02116-3975

NOTICE TO BIDDERS

Sealed bids for MBTA Contract No. **A27CN02, LIGHT RAIL ACCESSIBILITY PROGRAM D LINE, BROOKLINE VILLAGE STATION & LONGWOOD STATION, BROOKLINE, MASSACHUSETTS, (CLASS 1, GENERAL TRANSIT CONSTRUCTION – PROJECT VALUE $1,153,000.00)**, will be received by the Director of Contract Administration at the Contract Administration Office, 6th Floor, Room 6720, Transportation Building, 10 Park Plaza, Boston, Massachusetts, 02116-3975, until two o'clock (2:00 p.m.) on **April 11, 2007**. Immediately thereafter, in a designated room, the Bids will be opened and read publicly.

Work consists of, but is not limited to, furnishing labor, materials, and equipment for the complete and satisfactory execution of the work in conformance with the Contract Plans and Specifications for the general construction necessary to make the Longwood and Brookline Village MBTA Green Line (D Line) Stations fully accessible in compliance with the Americans with Disabilities Act (ADA) of 1990 and in support of the new MBTA Low Floor Vehicles (LFV). The Work includes phased demolition, construction, reconstruction, and relocation of the following systems: phased site work, landscaping, platforms, tactile platform edging, track crossings, curbs, sidewalks, fencing, utilities, ductwork, manholes, lighting systems, ramps, removing and resetting passenger shelters, site furnishings and station signage.

This Contract is subject to a financial assistance Contract between the MBTA and the Federal Transit Administration of U.S. Department of Transportation. FTA Participation **80 percent**.

Each prospective bidder proposing to bid on this project must be pre-qualified in accordance with the Authority's "Procedures Governing Classification and Rating of Prospective Bidders." Copies may be obtained from the Contract Administration Office at the above address. Requests for prequalification for this Project will not be accepted by the Authority after the tenth (10th) day preceding the date set for the opening of bids.

Pre-qualified bidders may obtain from the Contract Administration Office a "Request for Bid Form" which must be properly filled out and submitted for approval.

Bidding documents may be obtained from the Contract Administration Office at the address above from 8:30 a.m. to 4:00 p.m., beginning **on March 16, 2007**, Monday through Friday, at a charge of $50 per copy. The Authority's STANDARD SPECIFICATIONS, BIDDING AND CONTRACT REQUIREMENTS AND DIVISION 1 - GENERAL REQUIREMENTS dated November, 1983, is available at a charge of $5.00 per copy. Authority's STANDARD SPECIFICATION, CONSTRUCTION, dated January 1980, is available at a charge of $15.00 per copy. Bidding documents will be sent upon request and receipt of an additional fee of $15.00, payable by separate check. Bidding documents will be forwarded by Air Freight, where such service is available, at the expense of the plan holder. NONE OF THESE CHARGES ARE REFUNDABLE.

Bidder's attention is directed to Appendix 1, Notice of Requirement for Affirmative Action to Insure Equal Employment Opportunity; and to Appendix 2, Supplemental Equal Employment Opportunity, Anti-Discrimination, and Affirmative Action Program in the specifications. In addition, pursuant to the requirements of Appendix 3, Disadvantaged Business Enterprise (DBE) Participation Provision, Bidders must submit an assurance with their Bids that they will make sufficient and reasonable efforts to meet the stated DBE goal of 16 percent.

Bidders will affirmatively ensure that in regard to any contract entered into pursuant to this solicitation, minority and female construction contractors will be afforded full opportunity to submit Bids and will not be

discriminated against on the grounds of race, color, religion, sex, age, or national origin in consideration for an award.

Bidders will be required to comply with Federal Equal Employment Opportunity Regulations and the President's Executive Order No. 11246 and any amendments or supplements thereto.

Authorization for the Bidders to view the site of the work on the MBTA's property shall be obtained from the **Project Manager, Tikam Matai, MBTA 500 Arborway, Jamaica Plain, MA 02130, 617-222-4479**. The Authority will conduct an inspection tour of the site on **Thursday, March 22 at 11:00 a.m**. Bidders are requested to be present in front of the **Brookline Village Station, Station Street, Brookline, MA to** participate in the tour. Bidders are advised that they should have representation at this tour as no extra visits are planned.

A prebid conference will be held on **Thursday, March 22 at 1:00 p.m. in Conference Room #1 at 500 Arborway, Jamaica Plain, MA, Phone (617) 222-4479**. Any request for interpretation of the Plans and Specifications should be submitted in writing at the same time.

Bidders will be required to certify as part of their bids that they are able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the work.

This Contract is subject to Federal wage and hourly laws and minimum State wage rates as well as all other applicable labor laws.

Bidders are advised that the "Buy America" provisions of the Surface Transportation Assistance Act of 1982 (Pub. L-97-424) as amended, apply to any Contract, procurement or agreement which results from this solicitation.

Bid Guaranty shall consist of a bid deposit in the amount of five (5) percent of the value of the bid, in the form of a bid bond, cash, certified check, treasurer's or cashier's check.

The successful Bidder shall be required to furnish a Performance Bond and a Labor and Materials Payment Bond each for the full amount of the Contract price.

The Authority reserves the right to reject any or all Bids, to waive informalities, to advertise for new Bids or proceed to do the work otherwise, as may be deemed to be in the best interests of the Authority.
This information may be viewed at the MBTA website:

http://www.mbta.com/business_center/bidding_solicitations/current_solicitations/

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

Date: March 16, 2007

By: Bernard Cohen
Secretary and MBTA Chairman

Daniel A. Grabauskas
General Manager

SECTION 00100

INSTRUCTIONS TO BIDDERS

This Section specifies Instructions to Bidders in accordance with Standard Specifications Section 00100 except as modified herein.

1.03 EXAMINATION OF CONTRACT DOCUMENTS AND SITE OF WORK

C. Complete information and authorization for the Bidders to view the site of the work on Massachusetts Bay Transportation Authority's property shall be obtained from the office Mr. Tikam S. Matai, Project Manager, Telephone No. (617) 222-4479.

D. The Authority will conduct an inspection tour of the site **on March 22, 2007. Bidders are requested to be present in front of Brookline Village Station, Brookline, Massachusetts, at 11:00 a.m.** to participate in the tour. Bidders are advised that they should have representation at this tour as no extra visits are planned.

E. In addition to visiting the site for the purposes as specified above the Bidders shall visit the site to ascertain pertinent local conditions readily determined by inspection and inquiry, such as the location, accessibility, traffic conditions and general character of the site, labor conditions, the character and extent of existing work within or adjacent thereto, and any other work being performed.

F. The Authority does not guarantee or represent that existing construction or conditions conform to the Drawings. The Bidder shall visit the site and satisfy himself as to existing conditions. All necessary information shall be verified in the field before fabrication of new material. No claim for extra cost will be allowed by the Authority because of the Contractor's unfamiliarity with site conditions.

1.05 PREPARATION OF BIDS

A. Bid Prices

4. The Schedule of Bid Prices included in the following Form For Bid of this Bid Form will be used for the indicating of the Bid price information specified above.

5. In the event that there is an error in the computed totals based upon the unit prices and estimated quantities, the unit prices shall govern.

B. Addenda

2. The Bidder is required to acknowledge receipt of any addendum (a) issued to this contract by inserting the addendum (a) number in the space provided on **Page 14B** of this Bid Form.

D. Affidavits

3. Bids must contain the properly completed affidavit of non-collusion on **Page 20B** of this Bid Form.

1.06 DELIVERY OF BIDS

A. Bidders are advised that the Bid Form must include a Bid price for each of the items listed on the Contract Schedule of Bid Prices. The omission of a Bid price for any of the items is cause for rejection of all Bid prices of the Bid.

1.07 BID GUARANTY REQUIRED

A. In order to insure the faithful fulfillment of its term, each Bid shall be accompanied by a Bid Guaranty. Bid Guaranty shall be in the amount as specified in the "Notice to Bidders" in the form of an acceptable bid bond, cash, certified check, treasurer's or cashier's check issued to the MBTA by a responsible bank or trust company or by a surety or insurance company licensed or authorized by the Massachusetts Division of Insurance to engage in the business of surety in the Commonwealth and satisfactory to the Authority. Bid Guaranty shall be enclosed in a sealed envelope and be submitted with the Bid Form.

1.08 WITHDRAWAL OF BIDS

A. 1. If not earlier returned, when any such Bid is reached during the opening of the Bids, it will be returned to the Bidder unread.

1.10 REJECTION OF BIDS

B. 2. Bidders are advised that the certificate pertaining to ineligible Contractors on Page 16B of the Bid Form must be completed in its entirety. Failure to fully complete and submit the required certification will be considered an informality and may render the Bid non-responsive.

1.15 AWARD OF CONTRACT

B. Basis of Award. The Contract will be awarded by the Authority subject to the reservations of Section 00100 Article 1.14 as specified above, within 60 calendar days after opening of Bids to the lowest responsible and eligible Bidder whose Total Estimated Contract Bid Price, based upon the proposed schedule of unit, lump sum, and allowance Bid Prices, is the lowest Bid received.

1.17 RETURN OF BID GUARANTY

B. Bid Guarantees of lowest bidder and second lowest bidder will be retained until execution of the contract, previous to which, however, either Bidder who submitted cash, certified check, treasurer's or cashier's check as Bid Guaranty, may substitute a bid bond in an acceptable form furnished by a surety or insurance company licensed or authorized by the Massachusetts Division of Insurance to engage to the business of surety in the Commonwealth and satisfactory to the Authority.

1.18 CONTRACT BONDS REQUIRED

C. 1. Surety may be a bond in an acceptable form furnished by a surety or insurance company licensed or authorized by the Massachusetts Division of Insurance to engage in the business of surety in the Commonwealth and satisfactory to the Authority.

D. The bidder shall submit with the Bid Form a letter of commitment from his proposed surety indicating that Performance and Labor and Material Payment Bonds will be issued, if the Bidder is successful, in such sums as required by the Authority. The letter of commitment shall be attached to **Page 14B** of the Bid Form, where the Total Estimated Contract Bid Price is given.

1.21 INTERPRETATION OF BID DOCUMENTS

A. All questions about the meaning and intent of Bid Documents shall be submitted in writing, to the Assistant General Manager for Design and Construction of the Massachusetts Bay Transportation Authority, at the address specified in the Notice to Bidders. To be given consideration, all questions must be received at least 10 days prior to the date fixed for the opening of Bids. An interpretation of all questions which Authority elects to give will be issued by written Addenda. Only questions answered by formal written Addenda will be binding. Oral communications or interpretations will be without binding legal effect. Addenda will be mailed, by certified mail with return receipt requested, to all who obtained Bid Documents. All Addenda so issued shall become part of the Bid Documents. Obvious discrepancies in Bid Documents which are not addressed by a Bidder in accordance with the above procedure will be construed against the successful Bidder should a dispute arise.

B. A separate copy of the questions referring to meaning and intent of the Bid Documents shall be mailed to the Project Manager, at the address specified in the Notice to Bidders, and to be given consideration must be received at least 10 days prior to the date fixed for the openings of Bids. All interpretations the Authority elects to give will be made in the form of written Addenda to the Contract Documents, which Addenda shall become a part of the Bid Documents. The Addenda will be mailed to all persons who obtained Bid Documents in the manner described in the Notice to Bidders.

1.23 STANDARD SPECIFICATIONS, CONSTRUCTION

A. 1. Standard Specifications, Construction is available at a charge of $15.00 each, which is not refundable, and is to be considered part of the Contract Documents.

1.24 DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION PROVISION

A. Attention of all Bidders is directed to the assurance to be submitted with their Bids that they will make sufficient reasonable efforts to meet the stated DBE goal for this Contract. This assurance is provided on Page 17B of the Bid Form.

B. In addition, the attention of Bidders is directed to the requirements of the Disadvantaged Business Enterprise Participation Provision included as Appendix 3 of the Supplementary conditions. Forms included on Pages 28B through 33B of this Bid Form may be reproduced for additional copies. Failure to comply and submit the required documentation will render the Bid non-responsive.

C. For the purpose of this Contract, Bidders are reminded that the MBTA will only accept DBE's that are certified by the State Office of Minority and Women Business Assistance (SOMWBA) or a certified out-of-state firm certified under Section 8(a) of the Small Business Act. The Bidder must attach the DBE's most recent certification letter or document to the Affidavit on Page 32B.

1.25 BUY AMERICA

A. This solicitation and the resulting contract are subject to the Buy America requirements of 49 U.S.C. §5323(j) and the Federal Transit Administration's implementing regulations found at 49 CFR Part 661. These regulations require, as a matter of responsiveness, that the bidder or offeror submit with its offer a completed certification in accordance with § 661.6 or § 661.12, as appropriate.

B. A Buy America Certificate, as per attached format on Page 21B, must be completed and submitted with the bid. A bid which does not include the certificate will be considered non-responsive.

C. A waiver from the Buy America Provision may be sought by the Authority if grounds for the waiver exists.

D. Section 165a of the Surface Transportation Assistance Act of 1982, as amended, permits FTA participation on this contract only if steel, iron and manufactured products used in the contract are produced in the United States.

1.27 PREBID CONFERENCE

A. A Pre-Bid Conference will be held on March 22, 2007 at 1:00 p.m. at the office of the Project Manager, Mr. Tikam Matai, 500 Arborway, Jamaica Plain, MA 02130. It is imperative that prospective Bidders have a representative attend this meeting. Any request for interpretation of drawings and specifications should be submitted in writing at the same time.

1.28 BIDDING AND CONTRACT REQUIREMENTS, DIVISION 1-GENERAL REQUIREMENTS

A. Copies of the Authority's BIDDING AND CONTRACT REQUIREMENTS AND DIVISION 1 - GENERAL REQUIREMENTS, as amended, will be applicable to this Contract, is incorporated by reference, and may be purchased from the Contract Administration Office, Massachusetts Bay Transportation Authority, Transportation Building, 10 Park Plaza, Boston, Massachusetts 02116-3975, at a non-refundable charge of $5.00 each.

1.29 EQUAL EMPLOYMENT OPPORTUNITY (EEO)

A. Attention of all Bidders is directed to Section 00700, General Conditions, Article 5.26, and Paragraph X of the Supplementary Conditions. Compliance with these Specifications requires completion in full of the certification contained on Page 17B of the Form for Bid. Failure to comply fully and submit the required Certification may render the Bid non-responsive.

1.30 BIDDER STATUS IDENTIFICATION

A. Bidder's attention is directed to the applicable section of **Page 18B and 19B** regarding status identification. Bidders are advised that the applicable section of the above must be complete in its entirety.

1.31 CERTIFICATION OF DUMPING FACILITIES

A. Bidders are advised that the Certification of Dumping Facilities attached on **Page 23B** must be completed in its entirety.

1.32 RIGHT-TO-KNOW LAW

A. Bidders are advised that the Right-to-Know Law Certification attached on **Page 22B** must be completed in its entirety.

1.33 POST APPEALS

A. Post - Bid appeals shall be made within five (5) working days of the bid opening date and shall be made as follows:

1. The initial protest or appeal shall be made to the Deputy Director of Construction, Contracts who will collect the factual information pertaining to the appeal.

2. Upon collecting such factual information, the Office of Contract Administration will forward such information to the General Counsel for a recommendation as to the merits of the appeal.

3. After discussion with the Office of Contract Administration, the General Counsel, in conjunction with the Office of Contract Administration, will forward a recommendation to the Assistant General Manager for Design and Construction.

4. If the Assistant General Manager for Design and Construction does not concur with the recommendations, the Deputy will obtain any other additional information required so that a determination can be made, at which time the interested party will be notified in writing of the Authority's determination.

5. If the interested party does not agree with the determination, he/she may appeal directly to the Authority's General Counsel in writing.

6. The General Counsel will review all facts of the appeal and will make a final determination and will advise both the interested party and the Assistant General Manager for Design and Construction.

7. The Authority reserves the right to extend the post-bid appeal period beyond the five- (5) day limitation when deemed necessary by the Authority.

8. "Interested Party" means an actual or prospective bidder or offeror whose direct economic interest would be affected by the award of a contract or by the failure to award a contract.

9. ONCE THE GENERAL COUNSEL'S DETERMINATION HAS BEEN MADE, THE AUTHORITY'S DECISION IS FINAL AND WILL NOT BE RECONSIDERED UNLESS THERE IS ADDITIONAL INFORMATION WHICH WAS NOT AVAILABLE TO THE APPEALING PARTY AT THE TIME THE APPEAL WAS MADE.

10. Judicial or administrative authorities which may have jurisdictions over bid protests are as following:

    - o $25,000 or more - Superior Court Department of the Trial Court of the Commonwealth of Massachusetts.
    - o Under $25,000 - District Court for that city, i.e., Boston Municipal Court, Cambridge District Court, etc.
    - o Massachusetts Attorney General's Office.

B. In the event that the subject contract procurement is federally funded, all prospective interested parties are notified of the following:

1. Interested parties may elect to issue a protest to the FTA if the interested party reasons that the MBTA failed to have or follow written protest procedures. If an interested party elects to issue a protest to the Federal Transit Administration (FTA), the protest must be filed in accordance with FTA Circular 4220.1B (as periodically updated).

2. FTA may entertain a protest that alleges the MBTA failed to have or follow written protest procedures.

3. If a protest is filed prior to award, all firms sent a copy of the bid documents or firms that have been issued a formal proposal number will be notified of the pending protests existence.

4. The MBTA may elect to proceed with the procurement which may include the opening of bids and the subsequent award of a contract, regardless of the existence of a protest that is pending, in the event that a determination has been made that:

    a. The supplies or services to be contracted for are urgently required;

    b. Delivery or performance will be unduly delayed by failure to make award promptly;

    c. Failure to make a prompt award will otherwise cause undue harm to the MBTA or the Federal Government.

    If award is made, the procurement file will be documented to explain the basis for the award. Written notice of the decision to proceed with the award will be sent to the protestor and other interested parties.

1.34 Certification regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion

A. The Bidder will meet the requirements of 49 CFR Part 29 related to Debarment, Suspension, Ineligibility and Voluntary Exclusion.

B. In accordance with 49 CFR Part 29 and the "Instructions for Certification", the Bidder will provide either a "Primary Participant" certification (**Page 24B** and **25B**), if the contract value is $100,000.00 or more, or a "Lower Tier" certification (**Pages 26B** and **27B**), if the contract value exceeds $25,000.00 and is less than $100,000.00.

C. Additionally, for a contract of $100,000.00 or more, the Bidder will obtain a "Lower Tier certification" (**Pages 26B** and **27B**) from its proposed subcontractors if the subcontracts are expected to exceed $25,000.00. (See Paragraph D).

D. Lower Tier Certification (including DBE Subcontractors) is **not required as part of the bid submittal** but may be submitted as soon as practicable but in all cases prior to subcontractor approval by the Authority in accordance with Article 6.01., Paragraph E of the Authority's Standard Specifications", General Conditions Section 00700.

E. In the event a Bidder cannot provide a certification as set forth above, an explanation will be provided and attached to the certification.

1.35 Lobbying Restrictions

A. Restrictions

1. The Contractor shall timely comply with the requirements of the lobbying restrictions set forth in Section 301 of Public Law 101 - 121, as implemented by the Department of Transportation in 49 C.F.R. Part 20, and as those authorities may be hereafter amended.

2. If a Standard Form - LLL, "Disclosure Form to Report Lobbying", is required to be completed by the Contractor or subcontractor at any tier, such disclosure shall be furnished to the Deputy Director of Construction - Contracts.

B. Certification of Restrictions on Lobbying

1. The Bidder certifies on **Page 28B** of the Form for Bid, to the best of his or her knowledge or belief that it and its Principals:

   (a) No Federal appropriated funds have been paid, or will be paid, by or on behalf of the undersigned, to any person for the influencing or the attempting to influence an officer or employee of any agency, Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering of any cooperative agreement and the extension, continuation, renewal, Amendment, or modification of any cooperative of any Federal contract, grant, loan or agreement.

   (b) If any funds other than Federal appropriate funds have been paid, or will be paid, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form - LLL, "Disclosure Form to Report Lobbying", in accordance with its instructions.

   (c) The undersigned shall require that the language of this certification be included in the award Documents for all sub-awards at all tiers (including subcontracts, sub-grants, and contracts under grants, loans, and cooperative agreements) and that all sub-recipients shall certify and disclose accordingly.

2. This certification is a material representation of fact upon which reliance was placed when this transaction was made and entered into. Submission of this certification is a prerequisite for making

or entering into this transaction imposed by Section 1352, title U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 or not more than $100,000 for each failure.

1.38 CERTIFICATION OF CONSTRUCTION EQUIPMENT STANDARD COMPLIANCE

A. The contractor certifies that all diesel construction equipment used in this contract shall have emission control devices installed, such as oxidation catalysts or particulate filters on the exhaust system side of the diesel combustion engine equipment.

B. Bidders are advised that the MBTA Construction Equipment Standard Compliance attached on **page 29B** must be completed in its entirety

END OF SECTION

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY
TRANSPORTATION BUILDING
10 PARK PLAZA
BOSTON, MASSACHUSETTS 02116-3975

FORM FOR BID

TO THE MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

The undersigned hereby declares to have carefully examined the annexed form of Contract, Specifications and Plans therein referred to and also the sites upon which the Project Work is to be performed.

The undersigned proposes to furnish all labor, materials, and equipment required for Massachusetts Bay Transportation Authority **Contract No. A27CN02, LIGHT RAIL ACCESSIBILITY PROGRAM, BROOKLINE VILLAGE STATION & LONGWOOD STATION, BROOKLINE, MASSACHUSETTS** for the Massachusetts Bay Transportation Authority in accordance with the Plans and Specifications prepared by Gannett Fleming, Inc., Braintree, MA for the unit price, lump sum and allowance prices specified in the Schedule of Bid Prices, subject to additions and deductions according to the terms of the Specifications.

Accompanying this Bid Form is a bid deposit in the amount of five (5) percent of the value of the bid which shall become the property of the Massachusetts Bay Transportation Authority if, in case this Bid shall be accepted by said Authority, the undersigned shall fail to comply with the applicable statutes or fail as required hereby to execute the Contract with, and furnish bonds and certificates to, said Authority, within the time provided.

The undersigned also hereby declares that he is the only person interested in this Bid; that it is made without any connection with any other persons making any Bid for the same Work; that no person acting for, or employed by, the Massachusetts Bay Transportation Authority is directly or indirectly interested in this Bid, or in any contract which may be made under it, or in expected profits to arise therefrom; and it is made without directly or indirectly influencing or attempting to influence any other person or corporation to bid or to refrain from bidding or to influence the bid of any other person or corporation and that this Bid is made in good faith, without collusion or connection with any person bidding for the same work; and that this Bid is made with distinct reference and relation to the Plans and Specifications prepared for this case and herein mentioned. The undersigned declares that in regard to the conditions affecting the work to be done and the labor and materials needed, this Bid is based solely on his own investigation and research and not in reliance upon any plans, surveys, measurements, dimensions, calculations, estimates or representations of any employee, officer, or agent of the Authority.

If the Bidder is a foreign corporation it agrees, in case this Bid is accepted, to comply with the applicable provisions of Massachusetts General Laws, Chapter 181, before the time for execution of the Contract, as hereinafter provided, occurs.

The undersigned proposes and agrees that, if within sixty (60) calendar days after the opening of bids, notice that the Bid has been accepted by the Authority shall be mailed to him at the business address given below, he shall execute the Contract and furnish a Performance Bond and also a Labor and Materials Payment Bond for the full amount of the Contract price, within ten (10) calendar days after the date of the Notice of Award.

The undersigned agrees to commence work within fifteen (15) calendar days from the date of the mailing of the executed Contract to the Contractor (Section 00700 of these Specifications) unless otherwise ordered in writing

MBTA Contract No. A27CN02 – S+R Construction

by the Engineer; and he shall complete the entire Work, fully and acceptably, within ***three hundred and sixty five (365)*** calendar days from the date of the mailing of the executed Contract to the Contractor, or after the date on which he is ordered in writing by the Authority to commence work, whichever is later.

The undersigned covenants that he has not employed or retained any company or person (other than a full time bona fide employee working for the Contractor) to solicit or secure this Contract, and that he has not paid or agreed to pay any company or person (other than such an employee) any gift, fee, contribution, percentage, or brokerage fee contingent upon or resulting from the award of this Contract.

The Contractor warrants, represents and agrees that during the time this Contract is in effect, neither it nor any affiliated company, as hereinafter defined, participates in or cooperates with an international boycott, as defined in Section 999 (b) (3) and (4) of the Internal Revenue Code of 1954, as amended, or engages in conduct declared to be unlawful by Section 2 of Chapter 151E, Massachusetts General Laws. If there shall be a breach in the warranty representation and agreement contained in this paragraph, then without limiting such other rights as it may have, the MBTA shall be entitle to rescind this Contract. As used herein, an affiliated company shall be any business entity of which at least 51 percent of the ownership interests are directly or indirectly owned by the Contractor or by a person or persons or business entity or entities directly or indirectly owning at least 51 percent of the ownership interests of the Contractor, or which directly or indirectly owns at least 51 percent of the ownership interest of the Contractor.

This bid includes **Addendum (s)** numbered

1

The **Total Estimated Contract Bid Price** based upon the schedule of proposed Unit, Lump Sum and Allowance Bid Price is: One million, nine hundred seventy nine thousand, seven hundred and fifty five **Dollars** and no cents

Amount in Words

$ 1,979,755.00

Amount in Figures

USE BLACK INK OR TYPEWRITER IN COMPLETION OF FORM FOR BID AND THE SCHEDULE OF BID PRICES

ENTER TOTAL FROM PAGE NO. 15B(13)

SCHEDULE OF BID PRICES

THE SUBDIVISION OF THE TOTAL ESTIMATED CONTRACT BID PRICES IS AS FOLLOWS:

Massachusetts Bay Transportation Authority
Capital Management System
Schedule of Bid Prices
Contract A27CN02

Item Number	Description	Quantity	Unit Bid Price (written in words)	Unit Price	Amount
0110.002	CPM SCHEDULING	1.00	AT Seven Hundred Fifty Dollars and Zero Cents	FP Fixed Price $750.00	$750.00
0130.110	FIELD OFFICE	1.00	AT Three Hundred Fifteen Thousand Dollars and Zero Cents	LS Lump Sum $315,000.00	$315,000.00
0130.430	TRAFFIC OFFICERS SERVICES	1.00	AT One Hundred Eighty Thousand Dollars and Zero Cents	AL Allowance $180,000.00	$180,000.00
0130.432	ELECTRIC COMPANY	1.00	AT Two Thousand Dollars and Zero Cents	AL Allowance $2,000.00	$2,000.00
0211.488	TELEPHONE RELOCATION	1.00	AT Twenty-two Thousand Dollars and Zero Cents	AL Allowance $22,000.00	$22,000.00
				Carried Forward:	$519,750.00

Massachusetts Bay Transportation Authority
Capital Management System
Schedule of Bid Prices
Contract A27CN02

Item Number	Description	Quantity	Unit Bid Price (written in words)	Unit Price	Amount
				Brought Forward:	$519,750.00
0211.710	REMOVE AND REPLACE PASSENGER STATION PLATFORMS	1.00	AT One Hundred Eighty-eight Thousand Three Hundred Fifty Dollars and Zero Cents	LS Lump Sum $188,350.00	$188,350.00
0212.135	REMOVE AND DISPOSE OF ASPHALT/CONCRETE PAVEMENT	280.00	AT One Hundred Dollars and Zero Cents	CY Cubic Yard $100.00	$28,000.00
0212.152	REMOVE LEAD PAINT	1.00	AT Twenty-two Thousand Dollars and Zero Cents	AL Allowance $22,000.00	$22,000.00
0221.212	FINE GRADING & COMPACTION	1,960.00	AT Fifteen Dollars and Zero Cents	SY Square Yard $15.00	$29,400.00
0222.003	UNCLASSIFIED EXCAVATION	330.00	AT Eighty Dollars and Zero Cents	CY Cubic Yard $80.00	$26,400.00
				Carried Forward:	$813,900.00

Massachusetts Bay Transportation Authority
Capital Management System
Schedule of Bid Prices
Contract A27CN02

Item Number	Description	Quantity	Unit Bid Price (written in words)	Unit Price	Amount
				Brought Forward:	$813,900.00
0222.540	CATCH BASIN, MANHOLE OR LEACHING BASIN - ADJUST TO LINE AND/OR GRADE	2.00	AT Three Hundred Dollars and Zero Cents	EA Each $300.00	$600.00
0222.571	COMPACTED GRAVEL SUBBASE	240.00	AT Eighty Dollars and Zero Cents	TN Ton $80.00	$19,200.00
0222.596	3/4" SIZE CRUSHED STONE	60.00	AT Forty-five Dollars and Zero Cents	CY Cubic Yard $45.00	$2,700.00
0250.015	CLEAN CATCH BASINS & MANHOLES	1.00	AT Three Hundred Dollars and Zero Cents	EA Each $300.00	$300.00
0250.113	ABANDON CATCH BASIN	1.00	AT Three Hundred Dollars and Zero Cents	EA Each $300.00	$300.00
				Carried Forward:	$837,000.00

Massachusetts Bay Transportation Authority
Capital Management System
Schedule of Bid Prices
Contract A27CN02

Item Number	Description	Quantity	Unit Bid Price (written in words)	Unit Price	Amount
				Brought Forward:	$837,000.00
0250.116	ADJUST UTILITY CASTINGS TO GRADE	1.00	AT Three Thousand Dollars and Zero Cents	LS Lump Sum $3,000.00	$3,000.00
0261.115	SAW CUTTING BITUMINOUS CONCRETE	770.00	AT Three Dollars and Zero Cents	LF Linear Foot $3.00	$2,310.00
0261.126	BITUMINOUS CONCRETE EXCAVATION BY COLD PLANE	215.00	AT Ten Dollars and Zero Cents	SY Square Yard $10.00	$2,150.00
0261.151	BITUMINOUS CONCRETE PAVEMENT	350.00	AT One Hundred Dollars and Zero Cents	TN Ton $100.00	$35,000.00
0262.150	GRANITE CURB	550.00	AT Thirty Dollars and Zero Cents	LF Linear Foot $30.00	$16,500.00
				Carried Forward:	$895,960.00

Massachusetts Bay Transportation Authority
Capital Management System
Schedule of Bid Prices
Contract A27CN02

Item Number	Description	Quantity	Unit Bid Price (written in words)	Unit Price	Amount
				Brought Forward:	$895,960.00
0262.185	GRANITE CURB CURVED	70.00	AT Forty Dollars and Zero Cents	LF Linear Foot $40.00	$2,800.00
0262.249	STRAIGHT GRANITE TRANSITION CURB FOR PEDESTRIAN RAMPS	82.00	AT Forty Dollars and Zero Cents	LF Linear Foot $40.00	$3,280.00
0262.251	GRANITE TRANSITION CURB	60.00	AT Forty Dollars and Zero Cents	LF Linear Foot $40.00	$2,400.00
0262.701	CURBING - REMOVE AND RESET	480.00	AT Fifteen Dollars and Zero Cents	LF Linear Foot $15.00	$7,200.00
0262.825	PRECAST CONCRETE PLATFORM CURB	1,130.00	AT Two Hundred Fifteen Dollars and Zero Cents	LF Linear Foot $215.00	$242,950.00
				Carried Forward:	$1,154,590.00

Massachusetts Bay Transportation Authority
Capital Management System
Schedule of Bid Prices
Contract A27CN02

Item Number	Description	Quantity	Unit Bid Price (written in words)	Unit Price	Amount
				Brought Forward:	$1,154,590.00
0263.116	TACTILE WARNING STRIP	2,258.00	AT Twenty Dollars and Zero Cents	SF Square Foot $20.00	$45,160.00
0270.000	SITE IMPROVEMENTS	1.00	AT Seven Thousand Dollars and Zero Cents	LS Lump Sum $7,000.00	$7,000.00
0271.004	REMOVAL OF EXISTING FENCES	340.00	AT Eight Dollars and Zero Cents	LF Linear Foot $8.00	$2,720.00
0271.112	CHAIN LINK FENCE VINYL COATED GALVANIZED	1,215.00	AT Eight Dollars and Zero Cents	SF Square Foot $8.00	$9,720.00
0271.955	CONSTRUCTION FENCE	500.00	AT Thirteen Dollars and Seventy-five Cents	LF Linear Foot $13.75	$6,875.00
				Carried Forward:	$1,226,065.00

Massachusetts Bay Transportation Authority
Capital Management System
Schedule of Bid Prices
Contract A27CN02

Item Number	Description	Quantity	Unit Bid Price (written in words)	Unit Price	Amount
				Brought Forward:	$1,226,065.00
0271.956	CONSTRUCTION FENCE REMOVE & RESET	500.00	AT Ten Dollars and Zero Cents	LF Linear Foot $10.00	$5,000.00
0282.211	BALES OF HAY FOR EROSION CONTROL	130.00	AT Thirty Dollars and Zero Cents	LF Linear Foot $30.00	$3,900.00
0282.401	WOOD CHIP MULCH	30.00	AT Seventy-five Dollars and Zero Cents	CY Cubic Yard $75.00	$2,250.00
0284.100	TREES REMOVED UNDER 24"	2.00	AT Seven Hundred Fifty Dollars and Zero Cents	EA Each $750.00	$1,500.00
0291.943	TIMBER EDGE BEAMS	555.00	AT One Hundred Twenty-five Dollars and Zero Cents	LF Linear Foot $125.00	$69,375.00
				Carried Forward:	$1,308,090.00

Massachusetts Bay Transportation Authority
Capital Management System
Schedule of Bid Prices
Contract A27CN02

Item Number	Description	Quantity	Unit Bid Price (written in words)	Unit Price	Amount
				Brought Forward:	$1,308,090.00
0330.950	LUMINAIRE STANDARD CONCRETE FOUNDATION	42.00	AT Fifteen Hundred Dollars and Zero Cents	EA Each $1,500.00	$63,000.00
0337.402	HANDICAP RAMP	5.00	AT Seven Hundred Fifty Dollars and Zero Cents	EA Each $750.00	$3,750.00
0451.020	ASPHALT BLOCK PAVING	7,800.00	AT Fifteen Dollars and Seventy-five Cents	SF Square Foot $15.75	$122,850.00
0590.000	HIGHWAY GUARD REMOVE & RESET	5.00	AT One Hundred Seventy Dollars and Zero Cents	LF Linear Foot $170.00	$850.00
0590.198	STEEL BEAM HIGHWAY GUARD TYPE SS	15.00	AT One Hundred Eighty-two Dollars and Zero Cents	LF Linear Foot $182.00	$2,730.00
				Carried Forward:	$1,501,270.00

Massachusetts Bay Transportation Authority
Capital Management System
Schedule of Bid Prices
Contract A27CN02

Item Number	Description	Quantity	Unit Bid Price (written in words)	Unit Price	Amount
				Brought Forward:	$1,501,270.00
0613.050	TIMBER PLATFORMS AND WALKWAYS	1.00	AT Fifty-two Thousand Dollars and Zero Cents	LS Lump Sum $52,000.00	$52,000.00
0615.000	CARPENTRY	1.00	AT Twenty-seven Thousand Five Hundred Dollars and Zero Cents	LS Lump Sum $27,500.00	$27,500.00
0849.000	WINDOWS	1.00	AT Sixteen Thousand Dollars and Zero Cents	LS Lump Sum $16,000.00	$16,000.00
0990.100	PAINTING-EXTERIOR	1.00	AT Sixteen Thousand Dollars and Zero Cents	LS Lump Sum $16,000.00	$16,000.00
1040.825	PLATFORM SAFETY EDGE MARKING	555.00	AT Three Dollars and Zero Cents	LF Linear Foot $3.00	$1,665.00
				Carried Forward:	$1,614,435.00

Massachusetts Bay Transportation Authority
Capital Management System
Schedule of Bid Prices
Contract A27CN02

Item Number	Description	Quantity	Unit Bid Price (written in words)	Unit Price	Amount
				Brought Forward:	$1,614,435.00
1040.901	PAVEMENT MARKINGS	1,010.00	AT Three Dollars and Zero Cents	LF Linear Foot $3.00	$3,030.00
1041.618	DIRECTIONAL SIGN SUPPORTS	8.00	AT Two Hundred Fifty Dollars and Zero Cents	EA Each $250.00	$2,000.00
1042.012	SIGNAGE	1.00	AT Twenty-eight Thousand Dollars and Zero Cents	LS Lump Sum $28,000.00	$28,000.00
1042.017	PASSENGER INFORMATION DISPLAY SYSTEM	1.00	AT Three Thousand Five Hundred Dollars and Zero Cents	LS Lump Sum $3,500.00	$3,500.00
1042.052	PORTABLE BARRIER - TYPE III	2.00	AT Three Hundred Dollars and Zero Cents	EA Each $300.00	$600.00
				Carried Forward:	$1,651,565.00

Massachusetts Bay Transportation Authority
Capital Management System
Schedule of Bid Prices
Contract A27CN02

Item Number	Description	Quantity	Unit Bid Price (written in words)	Unit Price	Amount
				Brought Forward:	$1,651,565.00
1042.062	REFLECTORIZED DRUM WITH FLASHER	1,200.00	AT Zero Dollars and Fifty Cents	DD Drum Day $0.50	$600.00
1042.089	SIGN & SIGN SUPPORT REMOVED	2.00	AT Two Hundred Dollars and Zero Cents	EA Each $200.00	$400.00
1042.100	SIGNS REMOVED & RESET	6.00	AT One Hundred Fifty Dollars and Zero Cents	EA Each $150.00	$900.00
1042.240	SAFETY SIGNAGE FOR CONSTRUCTION OPERATIONS	46.00	AT Fifteen Dollars and Zero Cents	SF Square Foot $15.00	$690.00
1042.870	SAFETY CONTROLS FOR CONSTRUCTION OPERATIONS	1.00	AT Fifty Thousand Dollars and Zero Cents	LS Lump Sum $50,000.00	$50,000.00
				Carried Forward:	$1,704,155.00

Massachusetts Bay Transportation Authority
Capital Management System
Schedule of Bid Prices
Contract A27CN02

Item Number	Description	Quantity	Unit Bid Price (written in words)	Unit Price	Amount
				Brought Forward:	$1,704,155.00
1050.264	WOOD & STEEL BENCH - TYPE A	15.00	AT Eleven Hundred Dollars and Zero Cents	EA Each $1,100.00	$16,500.00
1050.265	WOOD & STEEL BENCH - TYPE B	1.00	AT Two Thousand Nine Hundred Dollars and Zero Cents	EA Each $2,900.00	$2,900.00
1076.021	PASSENGER SHELTER REMOVE & RESET	3.00	AT Thirty Thousand Dollars and Zero Cents	EA Each $30,000.00	$90,000.00
1098.010	TRASH RECEPTACLES - EXTERIOR	8.00	AT One Thousand Dollars and Zero Cents	EA Each $1,000.00	$8,000.00
1112.000	BICYCLE RACK	4.00	AT Six Hundred Dollars and Zero Cents	EA Each $600.00	$2,400.00
				Carried Forward:	$1,823,955.00

Massachusetts Bay Transportation Authority
Capital Management System
Schedule of Bid Prices
Contract A27CN02

Item Number	Description	Quantity	Unit Bid Price (written in words)	Unit Price	Amount
				Brought Forward:	$1,823,955.00
1260.010	SIGN/MAP PANEL	56.00	AT Fifty Dollars and Zero Cents	EA Each $50.00	$2,800.00
1440.301	MOBILE LIFT	4.00	AT Seven Thousand Dollars and Zero Cents	EA Each $7,000.00	$28,000.00
1600.150	SITE ELECTRICAL WORK	1.00	AT One Hundred Twenty-five Thousand Dollars and Zero Cents	LS Lump Sum $125,000.00	$125,000.00
	22,915. = SUM OF ALL QTYS.			**Total Estimated Contract Bid Price:**	$1,979,755.00

A BIDDER WILL NOT BE ELIGIBLE FOR AWARD OF A CONTRACT UNDER THIS INVITATION FOR BIDS UNLESS SUCH BIDDER HAS SUBMITTED AS A PART OF ITS BID THE FOLLOWING CERTIFICATION PERTAINING TO INELIGIBLE CONTRACTORS WHICH WILL BE DEEMED A PART OF THE RESULTING CONTRACT.

A. The S&R Construction Co., Inc. dba S&R Construction Enterprises 185 South Main Street Newton, NH 03858
(Name of Individual or Concern submitting this bid)

hereby certifies that **it is not included** on the U.S. Comptroller General's Consolidated **List of Parties Excluded from Federal Procurement and Non-procurement Programs** for Violations of Various Public Contracts Incorporating Labor Standards Provisions.

OR

B. The _____
(Name of Individual or Concern submitting this bid)

hereby certifies that **it is included** on the U.S. Comptroller General's Consolidated **List of Parties Excluded from Federal Procurement and Non-procurement Programs** for Violations of Various Public Contracts Incorporating Labor Standards Provisions.

Stephen Early, President
(Signature of authorized representative of Bidder)

It is a condition of this Contract, and shall be made a condition of each subcontract entered into pursuant to this Contract, that the Contractor and any subcontractor shall not require any laborer or mechanic employed in performance of the Contract to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous to his health or safety, as determined under construction safety and health standards (Title 29, Code of Federal Regulations, Part 1518, published in the Federal Register on April 17, 1971) promulgated by the United States Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act, (83 Stat. 96).

The undersigned hereby certifies that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the work.

The bidder hereby certifies he shall comply with the minority manpower ratio and specific action steps contained in the Appendices of the Supplementary Conditions in this Contract. The Contractor receiving the award of the Contract shall be required to obtain from each of its subcontractors and submit to the Contracting or administering agency prior to the performance of any work under said Contract a certification by said subcontractor, regardless of tier, that it will comply with the minority manpower ratio and specific affirmative action steps contained in these Appendices.

THE BIDDER ALSO CERTIFIES AND ASSURES THAT HE WILL MAKE SUFFICIENT REASONABLE EFFORTS TO MEET THE DISADVANTAGED BUSINESS ENTERPRISE (DBE) STATED GOAL ESTABLISHED FOR THIS CONTRACT.

Full name and address of the individual or concern submitting this bid:
S&R Construction Co., Inc. dba S&R Construction Enterprises
185 South Main Street
Newton, NH 03858

Signed: Stephen Early, President

Title: April 11, 2007 - Stephen Early, President

Date: April 11, 2007

NOTICE: Bid should be signed in ink by a person having proper legal authority, and the person's title should be given, such as "owner" in the case of an individual, "partner" in the case of a general partnership, "president", "treasurer" or other authorized officer in the case of a Corporation.

BIDDERS MUST SET FORTH, ACCURATE AND COMPLETE INFORMATION AS REQUIRED BY THIS SOLICITATION. FAILURE TO DO SO MAY RENDER THE OFFER NONRESPONSIVE OR UNACCEPTABLE.

ATTACH **BID DEPOSIT HERE**

THE AMERICAN INSTITUTE OF ARCHITECTS

AIA Document A310

Bid Bond

KNOW ALL MEN BY THESE PRESENTS, that we **S&R Construction Co.Inc.dba S&R Construction Enterprises, 185 South Main St, Newton, NH 03853**
(Here insert full name and address or legal title of Contractor)

as Principal, hereinafter called the Principal, and **The Hanover Insurance Company**
(Here insert full name and address or legal title of Surety)

a corporation duly organized under the laws of the State of **New Hampshire**
as Surety, hereinafter called the Surety, are held and firmly bound unto **Massachusetts Bay Transportation Authority, Boston, MA**
(Here insert full name and address or legal title of Owner)

as Obligee, hereinafter called the Obligee, in the sum of **Five Percent of the Attached bid**

Dollars (**5%**),

for the payment of which sum well and truly to be made, the said Principal and the said Surety, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has submitted a bid for
(Here insert full name, address and description of project)
Light Rail Accessibility Program, Brookline, MA; MBTA Contract No. A27CN02

NOW, THEREFORE, if the Obligee shall accept the bid of the Principal and the Principal shall enter into a Contract with the Obligee in accordance with the terms of such bid, and give such bond or bonds as may be specified in the bidding or Contract Documents with good and sufficient surety for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof, or in the event of the failure of the Principal to enter such Contract and give such bond or bonds, if the Principal shall pay to the Obligee the difference not to exceed the penalty hereof between the amount specified in said bid and such larger amount for which the Obligee may in good faith contract with another party to perform the Work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect.

Signed and sealed this **11th** day of **April, 2007**

(Witness)	**S&R Construction Co.Inc.dba S&R ConstructionEnterprises** (Principal) (Seal) Stephen Early, President (Title)
(Witness)	**The Hanover Insurance Company** (Surety) (Seal) Beryl A. Finn (Title) Attorney-In-Fact

Certified Copy Void Without Hanover Watermark

This Power of Attorney may not be used to execute any bond with an inception date after May 1, 2008

THE HANOVER INSURANCE COMPANY
MASSACHUSETTS BAY INSURANCE COMPANY
CITIZENS INSURANCE COMPANY OF AMERICA

POWERS OF ATTORNEY
CERTIFIED COPY

KNOW ALL MEN BY THESE PRESENTS: That THE HANOVER INSURANCE COMPANY and MASSACHUSETTS BAY INSURANCE COMPANY, both being corporations organized and existing under the laws of the State of New Hampshire, and CITIZENS INSURANCE COMPANY OF AMERICA, a corporation organized and existing under the laws of the State of Michigan, do hereby constitute and appoint

Michael F. Carney, Adam W. DeSanctis, Christine B. Gallagher, David A. Boutiette, Gregory D. Juwa, Michael T. Gilbert James J. Axon, Byran F. Juwa, Wilder Parks, Jr. , Beryl A. Finn and/or Paul A. Patalano

of **Woburn, MA** and each is a true and lawful Attorney(s)-in-fact to sign, execute, seal, acknowledge and deliver for, and on its behalf, and as its act and deed any place within the United States, or, if the following line be filled in, only within the area therein designated

any and all bonds, recognizances, undertakings, contracts of indemnity or other writings obligatory in the nature thereof, as follows:
Any such obligations in the United States, not to exceed Twenty Million and No/100 ($20,000,000) in any single instance

and said companies hereby ratify and confirm all and whatsoever said Attorney(s)-in-fact may lawfully do in the premises by virtue of these presents. These appointments are made under and by authority of the following Resolution passed by the Board of Directors of said Companies which resolutions are still in effect:

"RESOLVED, That the President or any Vice President, in conjunction with any Assistant Vice President, be and they are hereby authorized and empowered to appoint Attorneys-in-fact of the Company, in its name and as its acts, to execute and acknowledge for and on its behalf as Surety any and all bonds, recognizances, contracts of indemnity, waivers of citation and all other writings obligatory in the nature thereof, with power to attach thereto the seal of the Company. Any such writings so executed by such Attorneys-in-fact shall be as binding upon the Company as if they had been duly executed and acknowledged by the regularly elected officers of the Company in their own proper persons." (Adopted October 7, 1981 - The Hanover Insurance Company; Adopted April 14, 1982 – Massachusetts Bay Insurance Company; Adopted September 7, 2001 - Citizens Insurance Company of America)

IN WITNESS WHEREOF, THE HANOVER INSURANCE COMPANY, MASSACHUSETTS BAY INSURANCE COMPANY and CITIZENS INSURANCE COMPANY OF AMERICA have caused these presents to be sealed with their respective corporate seals, duly attested by a Vice President and an Assistant Vice President, this **8th** day of **August, 2006**.

THE HANOVER INSURANCE COMPANY
MASSACHUSETTS BAY INSURANCE COMPANY
CITIZENS INSURANCE COMPANY OF AMERICA

Richard M. Van Steenburgh, Vice President

Paul F. Carleo, Assistant Vice President

THE COMMONWEALTH OF MASSACHUSETTS)
COUNTY OF WORCESTER) ss.

On this **8th** day of **August 2006**, before me came the above named Vice President and Assistant Vice President of The Hanover Insurance Company, Massachusetts Bay Insurance Company and Citizens Insurance Company of America, to me personally known to be the individuals and officers described herein, and acknowledged that the seals affixed to the preceding instrument are the corporate seals of The Hanover Insurance Company Massachusetts Bay Insurance Company and Citizens Insurance Company of America, respectively, and that the said corporate seals and their signatures as officers were duly affixed and subscribed to said instrument by the authority and direction of said Corporations.

Barbara A. Garlick
Notary Public

My commission expires on November 3, 2011

I, the undersigned Assistant Vice President of The Hanover Insurance Company, Massachusetts Bay Insurance Company and Citizens Insurance Company of America, hereby certify that the above and foregoing is a full, true and correct copy of the Original Power of Attorney issued by said Companies, and do hereby further certify that the said Powers of Attorney are still in force and effect.

This Certificate may be signed by facsimile under and by authority of the following resolution of the Board of Directors of The Hanover Insurance Company, Massachusetts Bay Insurance Company and Citizens Insurance Company of America.

"RESOLVED, That any and all Powers of Attorney and Certified Copies of such Powers of Attorney and certification in respect thereto, granted and executed by the President or any Vice President in conjunction with any Assistant Vice President of the Company, shall be binding on the Company to the same extent as if all signatures therein were manually affixed, even though one or more of any such signatures thereon may be facsimile." (Adopted October 7, 1981 - The Hanover Insurance Company; Adopted April 14, 1982 Massachusetts Bay Insurance Company; Adopted September 7, 2001 - Citizens Insurance Company of America)

GIVEN under my hand and the seals of said Companies, at Worcester, Massachusetts, this 11th day of April, 2007

THE HANOVER INSURANCE COMPANY
MASSACHUSETTS BAY INSURANCE COMPANY
CITIZENS INSURANCE COMPANY OF AMERICA

Charles T. Wells
Charles T. Wells, Assistant Vice President

Certified Copy Void Without Hanover Watermark

DeSanctis Insurance Agency, Inc.

Phone: (781) 935-8480
Fax: (781) 933-5645

36 Cummings Park
Woburn, Massachusetts 01801

April 11, 2007

Massachusetts Bay Transportation Authority
10 Park Plaza
Boston, MA 02116

RE: S&R Construction Co.,Inc. d/b/a S&R Construction Enterprises, Newton, NH

Project: Light Rail Accessibility Program, Brookline, MA; MBTA Contract No. A27CN02

To Whom It May Concern:

The Hanover Insurance Company hereby issues this letter of commitment to issue a certain performance and payment bond in favor of S&R Construction Co., Inc.,d/b/a S&R Construction Enterprises in connection with the proposed contract between S&R Construction Co., Inc. d/b/a S&R Construction Enterprises and Massachusetts Bay Transportation Authority which is in the range of $1,153,000.

This letter is written with the understanding that the Surety's obligation only relates to the proposed contract and bond forms and is also subject to receipt of any necessary underwriting data. This commitment will expire in 120 days from the bid date.

Sincerely yours,

Beryl A. Finn
Attorney-in-fact

Certified Copy Void Without Hanover Watermark

This Power of Attorney may not be used to execute any bond with an inception date after May 1, 2008

THE HANOVER INSURANCE COMPANY
MASSACHUSETTS BAY INSURANCE COMPANY
CITIZENS INSURANCE COMPANY OF AMERICA

POWERS OF ATTORNEY
CERTIFIED COPY

KNOW ALL MEN BY THESE PRESENTS: That THE HANOVER INSURANCE COMPANY and MASSACHUSETTS BAY INSURANCE COMPANY, both being corporations organized and existing under the laws of the State of New Hampshire, and CITIZENS INSURANCE COMPANY OF AMERICA, a corporation organized and existing under the laws of the State of Michigan, do hereby constitute and appoint

Michael F. Carney, Adam W. DeSanctis, Christine B. Gallagher, David A. Boutiette, Gregory D. Juwa, Michael T. Gilbert James J. Axon, Byran F. Juwa, Wilder Parks, Jr., Beryl A. Finn and/or Paul A. Patalano

of **Woburn, MA** and each is a true and lawful Attorney(s)-in-fact to sign, execute, seal, acknowledge and deliver for, and on its behalf, and as its act and deed any place within the United States, or, if the following line be filled in, only within the area therein designated

any and all bonds, recognizances, undertakings, contracts of indemnity or other writings obligatory in the nature thereof, as follows:
Any such obligations in the United States, not to exceed Twenty Million and No/100 ($20,000,000) in any single instance

and said companies hereby ratify and confirm all and whatsoever said Attorney(s)-in-fact may lawfully do in the premises by virtue of these presents. These appointments are made under and by authority of the following Resolution passed by the Board of Directors of said Companies which resolutions are still in effect:

"RESOLVED, That the President or any Vice President, in conjunction with any Assistant Vice President, be and they are hereby authorized and empowered to appoint Attorneys-in-fact of the Company, in its name and as its acts, to execute and acknowledge for and on its behalf as Surety any and all bonds, recognizances, contracts of indemnity, waivers of citation and all other writings obligatory in the nature thereof, with power to attach thereto the seal of the Company. Any such writings so executed by such Attorneys-in-fact shall be as binding upon the Company as if they had been duly executed and acknowledged by the regularly elected officers of the Company in their own proper persons." (Adopted October 7, 1981 - The Hanover Insurance Company; Adopted April 14, 1982 – Massachusetts Bay Insurance Company; Adopted September 7, 2001 - Citizens Insurance Company of America)

IN WITNESS WHEREOF, THE HANOVER INSURANCE COMPANY, MASSACHUSETTS BAY INSURANCE COMPANY and CITIZENS INSURANCE COMPANY OF AMERICA have caused these presents to be sealed with their respective corporate seals, duly attested by a Vice President and an Assistant Vice President, this **8th** day of **August, 2006**.

THE HANOVER INSURANCE COMPANY
MASSACHUSETTS BAY INSURANCE COMPANY
CITIZENS INSURANCE COMPANY OF AMERICA

Richard M. Van Steenburgh, Vice President

Paul F. Carleo, Assistant Vice President

THE COMMONWEALTH OF MASSACHUSETTS)
COUNTY OF WORCESTER) ss.

On this **8th** day of **August 2006**, before me came the above named Vice President and Assistant Vice President of The Hanover Insurance Company, Massachusetts Bay Insurance Company and Citizens Insurance Company of America, to me personally known to be the individuals and officers described herein, and acknowledged that the seals affixed to the preceding instrument are the corporate seals of The Hanover Insurance Company Massachusetts Bay Insurance Company and Citizens Insurance Company of America, respectively, and that the said corporate seals and their signatures as officers were duly affixed and subscribed to said instrument by the authority and direction of said Corporations.

Barbara Ann Garlick
Notary Public
Commonwealth of Massachusetts
My Commission Expires Nov 3, 2011

Barbara A. Garlick
Notary Public

My commission expires on November 3, 2011

I, the undersigned Assistant Vice President of The Hanover Insurance Company, Massachusetts Bay Insurance Company and Citizens Insurance Company of America, hereby certify that the above and foregoing is a full, true and correct copy of the Original Power of Attorney issued by said Companies, and do hereby further certify that the said Powers of Attorney are still in force and effect.

This Certificate may be signed by facsimile under and by authority of the following resolution of the Board of Directors of The Hanover Insurance Company, Massachusetts Bay Insurance Company and Citizens Insurance Company of America.

"RESOLVED, That any and all Powers of Attorney and Certified Copies of such Powers of Attorney and certification in respect thereto, granted and executed by the President or any Vice President in conjunction with any Assistant Vice President of the Company, shall be binding on the Company to the same extent as if all signatures therein were manually affixed, even though one or more of any such signatures thereon may be facsimile." (Adopted October 7, 1981 - The Hanover Insurance Company; Adopted April 14, 1982 Massachusetts Bay Insurance Company; Adopted September 7, 2001 - Citizens Insurance Company of America)

GIVEN under my hand and the seals of said Companies, at Worcester, Massachusetts, this 11th day of April, 2007

THE HANOVER INSURANCE COMPANY
MASSACHUSETTS BAY INSURANCE COMPANY
CITIZENS INSURANCE COMPANY OF AMERICA

Charles T Wells

Charles T Wells, Assistant Vice President

Certified Copy Void Without Hanover Watermark

NOTE: If the Bidder is a corporation, indicate state of incorporation; if a partnership, give full Names and addresses of all partners; if an individual, give residential address if different from business address; and if joint ventures, give names and addresses of all firms of the joint venture.

If a **Corporation**

Incorporated in what State: New Hampshire

President: Stephen Early

Treasurer: Stephen Early

Secretary: Stephen Early

If a **Partnership** (Name all Partners):

Name of Partner: _____

Residence: _____

Name of Partner: _____

Residence: _____

If an **Individual**:

Name: _____

Residence: _____

If an **Individual Doing Business Under a Firm Name:**

Name of Firm: _____

Name of Individual: _____

Business Address: _____

Residence: _____

If a **Joint Venture:**

Name of Venture:_____

Business Address:_____

Name of Firm or Corporation:_____

Address:_____

Name of Firm or Corporation:_____

Address:_____

Name of Firm or Corporation:_____

Address:_____

Name of Firm or Corporation:_____

Address:_____

If any of the joint ventures is a corporation a copy of the vote of the corporation authorizing the joint venture should be attached hereto.

The proposed surety on the bond to be given is:

Name: The Hanover Insurance Agency

Home office Address: 440 Lincoln Street - Worcester, MA 01653

Massachusetts Address (If Different):_____

_____

AFFIDAVIT

State of Massachusetts)

County Essex) ss.: (Date) APril 11, 2007, 20

The undersigned being duly sworn, deposes and says that he is the
President
(sole owner; partner; president, treasurer, or other duly authorized official of a corporation)
of
S&R Construction Co., Inc. dba S&R Construction Enterprises
(Name of bidders as appearing in submitted bid)

for work in Brookline, MA (City / Town) on April 11, 2007 (opening date of bids);

and certifies under penalties of perjury that this bid is in all respects bona fide, fair and made without collusion or fraud with any other person. As used in this paragraph the word "person" shall mean any natural person, joint venture, partnership, corporation or other business or legal entity.

Stephen Early, President
Signature and Title of Person making Affidavit

Sworn to before me this

11th day of April 20 07

Denise DiMento
Essex County
Comm of MA
Exp. 3/16/2008

Notary Public

BUY AMERICA CERTIFICATE

Certification requirement for procurement of steel, iron, or manufactured products

Certificate of Compliance with 49 U.S.C. 5323(j)(1)

The bidder hereby certifies that it will meet the requirements of 49 U.S.C. 5323(j)(1) and the applicable regulations in 49 CFR Part 661.

Date April 11, 2007

Signature Stephen Early, President

Company Name S&R Construction Co., Inc. dba S&R Construction Enterprises

Title President

OR

Certificate of Non-Compliance with 49 U.S.C. 5323(j)(1)

The bidder hereby certifies that it cannot comply with the requirements of 49 U.S.C. 5323(j)(1), but it may qualify for an exception pursuant to 49 U.S.C. 5323(j)(2)(B) or (j)(2)(D) and the regulations in 49 CFR 661.7.

Date _____

Signature _____

Company Name _____

Title _____

A BIDDER WILL NOT BE ELIGIBLE FOR AWARD OF ANY CONTRACT UNDER THIS INVITATION FOR BIDS UNLESS SUCH BIDDER HAS SUBMITTED AS PART OF ITS BID THE FOLLOWING CERTIFICATION WHICH WILL BE DEEMED A PART OF THE RESULTING CONTRACT.

RIGHT-TO-KNOW LAW

CERTIFICATION

The Bidder hereby certifies that, if awarded this Contract, he will fully comply with the Massachusetts Right-to-Know Law, c. 470 of the Acts of 1983, (the Act.). In addition, he shall:

1. Obtain a Material Safety Data Sheet, (MSDS), for all substances or mixtures of substances which appear on the Massachusetts Substance List that he or any of his subcontractors brings to or uses on the worksite and will keep a copy of that MSDS on the worksite of this Contract.

2. Label each container of a substance or mixture of substances on the Massachusetts Substance List as required in §7 of the Act.

3. Provide the same training and non-technical instruction that he is required to provide under §15 of the Act to all MBTA employees who are exposed to the substance or to the mixture of substances. Training shall include instruction on the nature and effects of any substance or mixture of substances listed on the Massachusetts Substance List which the Bidder or any of his subcontractors brings to or uses on the worksite.

4. Provide to MBTA employees on the worksite the same protective equipment that the Bidder or any of his subcontractors provides to his employees.

Stephen Early, President

Signature of Authorized Representative of Bidder

S&R Construction Co., Inc. dba S&R Construction Enterprises
185 South Main Street
Newton, NH 03858

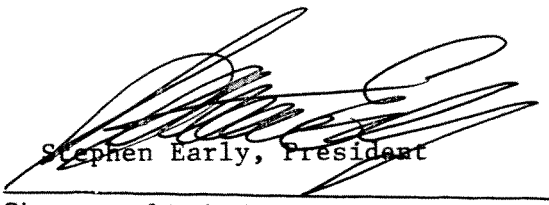
Name and Address of Bidder

CERTIFICATION OF DUMPING FACILITIES

I, Stephen Early, President

certify that I have adequate dumping facilities available at: Everett, MA

and that these facilities will be used in connection with work undertaken on this Contract and that such use will be in a manner compliant with State and Local requirements.



Stephen Early, President

Signature of Authorized Representative Bidder

S&P Construction Co,m Inc. dba S&R Construction Enterprises
185 South Main Street
Newton, NH 03858

Name and Address of Bidder:

April 11, 2007

Date

CERTIFICATION REGARDING DEBARMENT. SUSPENSION INELIGIBILITY AND VOLUNTARY EXCLUSION

The Primary Participant (potential contractor for a major third party contract) certifies to the best of its knowledge and belief, that it, and its principals:

1. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal, State or local department or agency.

2. Have not within a three-year period preceding this bid been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

3. Are not presently indicted for or otherwise criminally charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph, (2) of this certification; and

4. Have not within a three-year period preceding this bid had one or more public transactions (Federal, State or local) terminated for cause of default.

If the Primary Participant (potential contractor for a major third party contract) is unable to certify to any of the statements in this certification with respect to it or its principals, the Bidder shall attach an explanation to this certification).

THE PRIMARY PARTICIPANT (POTENTIAL CONTRACTOR FOR A MAJOR THIRD PARTY CONTRACT) CERTIFIES OR AFFIRMS THE TRUTHFULNESS AND ACCURACY OF THE CONTENTS OF THE STATEMENTS SUBMITTED ON OR WITH THIS CERTIFICATION AND UNDERSTANDS THAT THE PROVISIONS OF 31 U.S.C. SECTIONS 3801 ET SEQ. ARE APPLICABLE THERETO.

Primary Participant: Stephen Early
Signature

President
Title of Authorized Official

The undersigned chief legal counsel for the S&R Construction Enterprises hereby certifies that Stephen Early (Authorized Official) has authority under State and local law to comply with the subject assurances and that the certification above has been legally made.

J Richard Stein - Nixon Peabody LLC
Signature of Applicant's Attorney

April 11, 2007
Date

CERTIFICATION REGARDING DEBARMENT, SUSPENSION INELIGIBILITY AND VOLUNTARY EXCLUSION

Primary Covered Transactions

1. By signing and submitting this Proposal the prospective participant is providing the certification in accordance with 49 CFR Part 29.

2. The inability of a person to provide the certification will not necessarily result in denial of participation in this covered transaction. The prospective participant shall submit an explanation of why it cannot provide the certification. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of this prospective primary participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction.

3. The certification is a material representation of fact upon which reliance was placed when the department or agency determined to enter into this transaction. If it is later determined that the prospective primary participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause of default.

4. The prospective primary participant shall provide immediate written notice to the department or agency to which this proposal is submitted if at any time the prospective primary participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

5. The prospective primary participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this agreement.

6. The prospective primary participant further agrees by submitting this proposal that it will include the clause titled "Certification regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion -Lower Tier Covered Transaction", without modification, in all lower tier covered transactions and in all solicitations for lowered tier covered transactions.

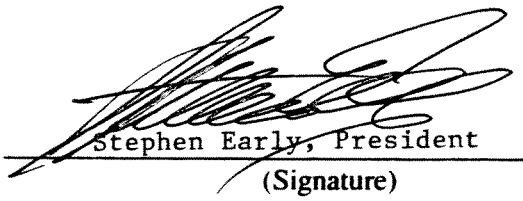
7. Except for transactions authorized under paragraph (5) of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.

CERTIFICATION REGARDING DEBARMENT, SUSPENSION INELIGIBILITY AND VOLUNTARY EXCLUSION

The Lower Tier Participant (potential third party contractor or potential subcontractor under a third party contract) certifies by submission of this proposal, that neither it nor its principals are presently debarred, suspended, proposed for debarment, declared ineligible, or Voluntarily excluded from covered transactions by any Federal, State or local department or agency.

If the Lower Tier Participant (potential third party contractor or potential subcontractor under a third party contract) is unable to certify to any of the statements in this certification, such Participant shall attach an explanation to this Proposal.

THE LOWER TIER PARTICIPANT (POTENTIAL THIRD PARTY CONTRACTOR OR POTENTIAL SUBCONTRACTOR UNDER A THIRD PARTY CONTRACT) CERTIFIES OR AFFIRMS THE TRUTHFULNESS AND ACCURACY OF THE CONTENTS OF THE STATEMENTS SUBMITTED ON OR WITH THIS CERTIFICATION AND UNDERSTANDS THAT THE PROVISIONS OF 31 U.S.C. SECTIONS 3801 ET SEQ. ARE APPLICABLE THERETO.

Lower Tier Participant 

Stephen Early, President
(Signature)

President, S&R Constriction Co., Inc. dba
(Title)

S&R Construction Enterprises

CERTIFICATION REGARDING DEBARMENT, SUSPENSION INELIGIBILITY AND VOLUNTARY EXCLUSION

"INSTRUCTIONS FOR CERTIFICATION"

Lower Tier Covered Transactions

1. By signing and submitting this proposal the prospective lower tier participant is providing the certification in accordance with 49 CFR Part 29.

2. This certification is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

3. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances.

4. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.

5. The prospective lower tier participation further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transactions", without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

6. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that it is nor debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may check the Nonprocurement List.

7. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required. The knowledge and information of a participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

8. Except for transactions authorized under paragraph (4) of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

CERTIFICATION OF RESTRICTIONS ON LOBBYING

No Federal appropriated funds have been paid, or will be paid, by or on behalf of the undersigned, to any person for the influencing or the attempting to influence an officer or employee of any agency, Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant the making of any Federal loan, the entering of any cooperative agreement and the extension, continuation, renewal, Amendment, or modification of any cooperative of any Federal contract, grant, loan or agreement.

THE PRIMARY PARTICIPANT (POTENTIAL CONTRACTOR FOR A MAJOR THIRD PARTY CONTRACT) CERTIFIES OR AFFIRMS THE TRUTHFULNESS AND ACCURACY OF THE CONTENTS OF THE STATEMENTS SUBMITTED ON OR WITH THIS CERTIFICATION AND UNDERSTANDS THAT THE PROVISIONS OF 31 U.S.C. SECTIONS 3801 ET SEQ. ARE APPLICABLE THERETO.

Primary participant: Stephen Early
Signature

President
Title of Authorized Official

The undersigned chief legal counsel for the S&R Construction Co., Inc. dba S&R Construction Enterprises hereby certifies that Stephen Early (Authorized Official) has authority under State and local law to comply with the subject assurances and that the certification above has been legally made.

Richard Stein, Peabody Nixon, LLC
Signature of Applicant's Attorney

April 11, 2007
Date

CERTIFICATION OF CONSTRUCTION EQUIPMENT STANDARD COMPLIANCE

I, Stephen Early

Hereby certify that all diesel construction equipment used in this contract has emission control devices installed, such as oxidation catalysts or particulate filters on the exhaust system side of the diesel combustion engine equipment.

Stephen Early, President

Signature of Authorized Representative/Bidder

S&R Construction Co., Inc. dba S&R COnstruction Enterprises
185 South Main Street - Newton, NH 03858

Name and Address of Bidder

APril 11, 2007

Date

Form A

SCHEDULE OF PARTICIPATION OF DISADVANTAGED BUSINESS ENTERPRISE

Project No. A27CN02
2007

LOCATION Brookline Village Station
and Longwood Station - Brookline, MA

S&R Construction Co., Inc. dba
S&R Construction Enterprises
Name of Prime Bidder

NAME OF DISADVANTAGED BUSINESS	ADDRESS	TYPE OF WORK & CONTRACT ITEMS OR PARTS THEREOF TO BE PERFORMED	PROJECTED START AND FINISH DATE	AGREED PRICE
K Daponte Construction Corp.	551 Indian Town Rd. Fall River, MA 02790	Furnish and install items 0262.150, 0262.185, 0262.249 0262.251, 0451.020, 0262.825, and remove and reset 0262.701	Summer of 2007 thru Spring 2008	$ 275,009.20
Don Martin Corporation	475 School Street Alden Crossing Marshfield, MA	Furnish and install bituminous concrete pavement	Fall 2007 thru Spring 2008	$63,000.00
McCoy Fence, Inc.	14 Baird Street Dorchester, MA 02124	Furnish and install fence & guardrail items: 0590.198, 0271.004, 0271.112, 0271.955 + 0590.000	Fall 2007 thru Summer of 2008	$23,338.79

TOTAL DBE	**$ 361,347.99**
TOTAL BID	$1,979,755.00
TOTAL %	**18.25%**

A COPY OF THE DBE'S MOST RECENT CERTIFICATION AND AN ORIGINAL AFFADAVIT MUST BE ATTACHED TO THIS SCHEDULE

V. **Form B**

MBTA Contract No. A27CN02
Description Brookline Village STATION & Longwood STATION

DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
LETTER OF INTENT

To: STR Construction Enterprises
(Name of Prime Bidder)

The undersigned intends to perform work in connection with the above project as (check one):

_____ an individual	_____ DBE
_____ a partnership	_____ a joint venture
_X_ a corporation	

The Disadvantaged Business status of the undersigned is confirmed:
(a) on the reference list of Disadvantaged Business Enterprises dated _____, or
(b) on the attached Disadvantaged Business Enterprise Identification Statement.

The undersigned is prepared to perform the following work in connection with the above project.
(Specify in detail particular work items or parts thereof to be performed):
Furnish & install items 0262.150, 0262.185, 0262.249, 0262.251, 0451.020, 0262.825 & remove & reset 0262.701
at the following price: $ 915,009.20

You have projected the following commencement date for such work, and the undersigned is projecting completion of such work as follows:

Items	Projected Commencement Date	Projected Completion Date
as listed above	Summer 2007	Spring 2008

The above work will not be sublet to a non-Disadvantaged Business Enterprise at any tier. The undersigned will enter into a formal agreement for the above work with you, conditioned upon your execution of a contract with the MBTA.

Date 4-11-07

K. DaPonte Construction Corp.
551 Indian Town Road
Fall River, MA 02790
Name of Disadvantaged Business Enterprise

By _____
President, Kevin DaPonte

APR 09 2007

V. Form C

MBTA Contract No: A27CN02
Description: Brookline Village Station & Longwood Station

DBE AFFIDAVIT

STATE OF Massachusetts (Date _____)

COUNTY OF Essex S.S.

The undersigned being duly sworn, deposes and says that he/she is the

President
president; treasurer; or other duly authorized official of a corporation) (sole owner; partner;

of K. DaPonte Construction Corp. 551 Indian Town Road Fall River, MA 02790
(Name of DBE)

and certifies that since the date of its certification by

SOMWBA
(SOMWBA or out-of-state certification agency)

the certification has not been revoked nor has it expired nor has there been any change in the minority status of K. DaPonte Construction Corp. 551 Indian Town Road Fall River, MA 02790
(Name of DBE)

(Signature and Title of Person Making Affidavit)

Sworn to before me this 11 day of April 19 2007

Denise DiMento - Comm of MA
(Notary Public) Essex County - Exp. 3-16-2008

NOTE: The Bidder must attach the DBE's most recent certification letter to this affidavit.

COMMONWEALTH OF MASSACHUSETTS

DEPARTMENT OF BUSINESS AND TECHNOLOGY

STATE OFFICE OF MINORITY AND WOMEN BUSINESS ASSISTANCE

Massachusetts Transportation Building

Ten Park Plaza, Suite 3740, Boston, MA 02116

Internet: http://www.somwba.state.ma.us

E-Mail: webmaster@somwba.state.ma.us

MITT ROMNEY
GOVERNOR

KERRY HEALEY
LIEUTENANT GOVERNOR

ROBERT L. FORTES
EXECUTIVE DIRECTOR

TELEPHONE:
(617) 973-8692

FACSIMILE:
(617) 973-8637

February 24, 2006

Mr. Kevin DaPonte
K DAPONTE CONSTRUCTION CORPORATION
551 Indian Town Road
Fall River, MA 02790

Dear Mr. DaPonte:

The State Office of Minority and Women Business Assistance (SOMWBA), acting as certification agent for the **Massachusetts Highway Department (MHD), the Massachusetts Bay Transportation Authority (MBTA), the Massachusetts Port Authority (MassPort), the Massachusetts Turnpike Authority/Central Artery/Tunnel (MTA/CA/T) and the Massachusetts Aeronautics Commission (MAC)** is pleased to notify you that your company has been renewed as a disadvantaged business enterprise (DBE). Your company continues to be assigned **NAICS Code(s) 238110 AND 238140** with the certified business description of, **INSTALLATION OF SIDEWALKS, CURB SETTING, CONCRETE FINISHING AND MASONRY WALLS.**

Your firm's designation as a **DBE** will appear in the **Massachusetts Central Register** and the DBE Certified Business Listing of eligible firms for federal-aid transportation projects.

As a **DBE**, you must inform SOMWBA in writing of any change in circumstances affecting your ability to meet size, disadvantaged status, ownership, control requirements or any material change in the information provided in your application form. Changes in management responsibility among members of a limited liability company are covered by this requirement. You must attach supporting documentation describing in detail the nature of such changes. The notice must take the form of an affidavit sworn to by the owners of the firm before a person who is authorized by state law to administer oaths or of an un-sworn declaration executed under penalty of perjury of the laws of the United States. You must provide the written notification within 30 days of the occurrence of the change. If you fail to make timely notification of such a change, you will be deemed to have failed to cooperate under 49 CFR 26.109(c). SOMWBA reserves the right to monitor, perform random spot checks, revoke the firm's certification if it no longer meets the certification criteria or re-evaluate the firm due to any changes in the DOT policies affecting interpretation/application of regulatory eligibility standards.

To renew your firm's DBE certification and if it continues to meet the applicable criteria, on or before your firm's certification anniversary date of **December 27, 2006**, and each year thereafter, please send SOMWBA the following documents:

(1) Please complete the attached No Change Affidavit. SOMWBA will provide the affidavit in reminder letter annually.
(2) A signed copy of your company's, and all of its affiliates', U.S. Tax Returns including all schedules and attachments for the year(s) indicated.
(3) Sole proprietors, a signed copy of your complete tax return including the Schedule C. for the year(s) indicated.
(4) Personal Tax Returns for the last two (2) years.
(5) All company financial statements for the year(s) indicated.
(6) A notarized statement of the number of full-time and part-time employees (including owner) for each year indicated.
(7) Completed Personal Financial Statement and Statement of Disadvantage Forms.

If you have changed your company name or address, please notify Ms. Nedra D. White, in writing on the company's letterhead in order to update your state vendor file.

During the period of your certification, if you have further questions regarding annual reviews, please contact Ms. Nedra D. White, SOMWBA/DBE Renewal Specialist, at (617)973-8648.

Very truly yours,

Robert L. Fortes
Certification Committee

CC1586 CM
Fldbernu

V. **Form B**

MBTA Contract No. A27CN02
Description Brookline & Longwood STATION

DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
LETTER OF INTENT

To: STR Construction Enterprises
(Name of Prime Bidder)

The undersigned intends to perform work in connection with the above project as (check one):

____	an individual	____X____	DBE
____	a partnership	____	a joint venture
____X____	a corporation		

The Disadvantaged Business status of the undersigned is confirmed:
(a) on the reference list of Disadvantaged Business Enterprises dated _____, or
(b) on the attached Disadvantaged Business Enterprise Identification Statement.

The undersigned is prepared to perform the following work in connection with the above project, (Specify in detail particular work items or parts thereof to be performed):
Bituminous concrete pavement, F+I
at the following price: $63,000.00

You have projected the following commencement date for such work, and the undersigned is projecting completion of such work as follows:

Items	Projected Commencement Date	Projected Completion Date
0261.151	Fall 2007	Spring 2008

The above work will not be sublet to a non-Disadvantaged Business Enterprise at any tier. The undersigned will enter into a formal agreement for the above work with you, conditioned upon your execution of a contract with the MBTA.

Date 04.06.07

Dan Marshall
Name of Disadvantaged Business Enterprise

By Donald G Marshall

V. Form C

MBTA Contract No: A27CN02
Description: Brookline & Longwood

DBE AFFIDAVIT

STATE OF Massachusetts (Date 04.07.07)

COUNTY OF Plymouth S.S.

The undersigned being duly sworn, deposes and says that he/she is the

Vice President
president; treasurer; or other duly authorized official of a corporation) (sole owner; partner;

of Don Martin Corp
(Name of DBE)

and certifies that since the date of its certification by

SOMWBA
(SOMWBA or out-of-state certification agency)

the certification has not been revoked nor has it expired nor has there been any change in the minority status of Don Martin Corp
(Name of DBE)

[signature]
(Signature and Title of Person Making Affidavit)

Sworn to before me this 4 day of April 2007

[signature]
(Notary Public)

NOTE: The Bidder must attach the DBE's most recent certification letter to this affidavit.

APR 09 2007

BY: _____

COMMONWEALTH OF MASSACHUSETTS

DEPARTMENT OF BUSINESS AND TECHNOLOGY

STATE OFFICE OF MINORITY AND WOMEN BUSINESS ASSISTANCE

Massachusetts Transportation Building

Ten Park Plaza, Suite 3740, Boston, MA 02116

Internet: http://www.somwba.state.ma.us

E-Mail: webmaster@somwba.state.ma.us

MITT ROMNEY
GOVERNOR

KERRY HEALEY
LIEUTENANT GOVERNOR

ROBERT L. FORTES
EXECUTIVE DIRECTOR

TELEPHONE:
(617) 973-8692

FACSIMILE:
(617) 973-8637

August 11, 2006

Mr. Donald J. Martin
DON MARTIN CORPORATION
475 School Street, Alden Crossing, U#6
Marshfield, MA 02050

Dear Mr. Martin:

The State Office of Minority and Women Business Assistance (SOMWBA), acting as certification agent for the **Massachusetts Highway Department (MHD), the Massachusetts Bay Transportation Authority (MBTA), the Massachusetts Port Authority (MassPort), the Massachusetts Turnpike Authority/Central Artery/Tunnel (MTA/CA/T) and the Massachusetts Aeronautics Commission (MAC)** is pleased to notify you that your company **has been renewed** as a disadvantaged business enterprise (DBE). Your company continues to be assigned **NAICS Code(s) 237310 AND 238910** with the certified business description of **ASPHALT PAVING, ROAD CONSTRUCTION CONTRACTOR AND TRUCK RENT/LEASE.**

Your firm's designation as a DBE will appear in the Massachusetts Central Register and the DBE Certified Business Listing of eligible firms for federal-aid transportation projects.

As a DBE, you must inform SOMWBA in writing of any change in circumstances affecting your ability to meet size, disadvantaged status, ownership, control requirements or any material change in the information provided in your application form. Changes in management responsibility among members of a limited liability company are covered by this requirement. You must attach supporting documentation describing in detail the nature of such changes. The notice must take the form of an affidavit sworn to by the owners of the firm before a person who is authorized by state law to administer oaths or of an un-sworn declaration executed under penalty of perjury of the laws of the United States. You must provide the written notification within 30 days of the occurrence of the change. If you fail to make timely notification of such a change, you will be deemed to have failed to cooperate under 49 CFR 26.109(c).

To renew your firm's DBE certification and if it continues to meet the applicable criteria, on or before your firm's certification anniversary date of **August 1, 2007**, and each year thereafter, please send SOMWBA the following documents:

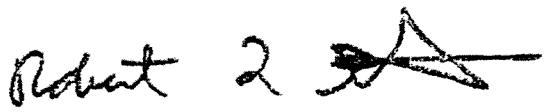
(1) Please **complete** the attached No Change Affidavit. SOMWBA will provide the affidavit in reminder letter annually.
(2) A **signed** copy of your company's, and all of its affiliates', U.S. Tax Returns including all schedules and attachments for the year(s) indicated.
(3) Sole proprietors, a **signed** copy of your complete tax return including the Schedule C for the year(s) indicated.
(4) Personal Tax Returns for the last two (2) years.
(5) All company financial statements for the year(s) indicated.
(6) A notarized statement of the number of full-time and part-time employees (including owner) for each year indicated.
(7) Completed Personal Financial Statement and Statement of Disadvantage Forms.

If you have changed your company name or address, please notify Ms. Nedra D. White, in writing on the company's letterhead in order to update your state vendor file.

SOMWBA reserves the right to monitor, perform random spot checks, re-evaluate the firm or revoke the firm's certification if it no longer meets the certification criteria.

During the period of your certification, if you have further questions regarding annual reviews, please contact Ms. Nedra D. White, SOMWBA/DBE Renewal Specialist, at (617)973-8648.

Very truly yours,



Robert L. Fortes
Certification Committee

V. **Form B**

MBTA Contract No. A27CN02
Description Brookline Village Station + Longwood Station

DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
LETTER OF INTENT

To: S+R Construction
(Name of Prime Bidder)

The undersigned intends to perform work in connection with the above project as (check one):

_____ an individual	_____ DBE
_____ a partnership	_____ a joint venture
X a corporation	

The Disadvantaged Business status of the undersigned is confirmed:
(a) on the reference list of Disadvantaged Business Enterprises dated _____, or
(b) on the attached Disadvantaged Business Enterprise Identification Statement.

The undersigned is prepared to perform the following work in connection with the above project,
(Specify in detail particular work items or parts thereof to be performed):
Furnish & Install fence & guardrail items: 0590.198, 0271.004, C 271.112, 0271.955 + C590.000
at the following price: $23,338.79

You have projected the following commencement date for such work, and the undersigned is projecting completion of such work as follows:

Items	Projected Commencement Date	Projected Completion Date
As Listed	Fall 2007	Summer 2008

The above work will not be sublet to a non-Disadvantaged Business Enterprise at any tier. The undersigned will enter into a formal agreement for the above work with you, conditioned upon your execution of a contract with the MBTA.

Date 4/9/07

McCoy Fence Inc
Name of Disadvantaged Business Enterprise

By Ralph McCoy - Pres

V. Form C

MBTA Contract No: A27CN02
Description: Brookline Village Station + Longwood Station

DBE AFFIDAVIT

STATE OF Massachusetts (Date 4/9/07

COUNTY OF SUFFOLK S.S.

The undersigned being duly sworn, deposes and says that he/she is the

President (sole owner; partner; president; treasurer; or other duly authorized official of a corporation)

of McCoy Fence Inc (Name of DBE)

and certifies that since the date of its certification by

SOMWBA (SOMWBA or out-of-state certification agency)

the certification has not been revoked nor has it expired nor has there been any change in the minority status of McCoy Fence Inc (Name of DBE)

Ralph McCoy, Pres (Signature and Title of Person Making Affidavit)

Sworn to before me this 11 day of April 19 2007

Denise D. Nardi Comm of Mass-Essex County (Notary Public)

Exp. 3/16/2007

NOTE: The Bidder must attach the DBE's most recent certification letter to this affidavit.

COMMONWEALTH OF MASSACHUSETTS

DEPARTMENT OF BUSINESS AND TECHNOLOGY

STATE OFFICE OF MINORITY AND WOMEN BUSINESS ASSISTANCE

Massachusetts Transportation Building

Ten Park Plaza, Suite 3740, Boston, MA 02116

Internet: http://www.somwba.state.ma.us

E-Mail: webmaster@somwba.state.ma.us

MITT ROMNEY
GOVERNOR

KERRY HEALEY
LIEUTENANT GOVERNOR

ROBERT L. FORTES
EXECUTIVE DIRECTOR

TELEPHONE:
(617) 973-8692

FACSIMILE:
(617) 973-8637

December 28, 2006

Mr. Ralph McCoy
MCCOY FENCE INC
14 Baird Street
Dorchester, MA 02124

Dear Mr. McCoy:

The State Office of Minority and Women Business Assistance (SOMWBA), acting as certification agent for the **Massachusetts Highway Department (MHD), the Massachusetts Bay Transportation Authority (MBTA), the Massachusetts Port Authority (MassPort), the Massachusetts Turnpike Authority/Central Artery/Tunnel (MTA/CA/T) and the Massachusetts Aeronautics Commission (MAC)** is pleased to notify you that your company has been **renewed** as a disadvantaged business enterprise (DBE). Your company continues to be assigned **NAICS Code(s) 237310 AND 238990** with the certified business description of **FENCING AND GUARDRAIL INSTALLATION.**

Your firm's designation as a DBE will appear in the Massachusetts Central Register and the DBE Certified Business Listing of eligible firms for federal-aid transportation projects.

As a DBE, you must inform SOMWBA in writing of any change in circumstances affecting your ability to meet size, disadvantaged status, ownership, control requirements or any material change in the information provided in your application form. Changes in management responsibility among members of a limited liability company are covered by this requirement. You must attach supporting documentation describing in detail the nature of such changes. The notice must take the form of an affidavit sworn to by the owners of the firm before a person who is authorized by state law to administer oaths or of an un-sworn declaration executed under penalty of perjury of the laws of the United States. You must provide the written notification within 30 days of the occurrence of the change. If you fail to make timely notification of such a change, you will be deemed to have failed to cooperate under 49 CFR 26.109(c).

To renew your firm's DBE certification and if it continues to meet the applicable criteria, on or before your firm's certification anniversary date of **October 1, 2007**, and each year thereafter, please send SOMWBA the following documents:

(1) Please **complete** the attached No Change Affidavit. SOMWBA will provide the affidavit in reminder letter annually.
(2) A **signed** copy of your company's, and all of its affiliates', U.S. Tax Returns including all schedules and attachments for the year(s) indicated.
(3) Sole proprietors, a **signed** copy of your complete tax return including the Schedule C for the year(s) indicated.
(4) Personal Tax Returns for the last two (2) years.
(5) All company financial statements for the year(s) indicated.
(6) A notarized statement of the number of full-time and part-time employees (including owner) for each year indicated.
(7) Completed Personal Financial Statement and Statement of Disadvantage Forms.

If you have changed your company name or address, please notify Ms. Nedra D. White, in writing on the company's letterhead in order to update your state vendor file.

SOMWBA reserves the right to monitor, perform random spot checks, re-evaluate the firm or revoke the firm's certification if it no longer meets the certification criteria.

During the period of your certification, if you have further questions regarding annual reviews, please contact Ms. Nedra D. White, SOMWBA/DBE Renewal Specialist, at (617)973-8648.

Very truly yours,

Robert L. Fortes
Certification Committee

V. Form D

DISADVANTAGED BUSINESS ENTERPRISE UNAVAILABLE CERTIFICATION

I, _____ , _____
(Name) (Title)

of _____ , certify that on _____
(Prime Bidder) (Date)

I contacted the following Disadvantaged Business Enterprise to obtain a bid for work items to be performed on MBTA Contract No. _____.

Disadvantaged Contractor	Work Items Sought	Form of Bid Sought (i.e., unit price, materials & labor labor only, etc.)
_____	_____	_____
_____	_____	_____
_____	_____	_____

To the best of my knowledge and belief, said Disadvantaged Business Enterprise was unavailable for work on this project, or unable to prepare a bid for the following reason(s):

_____
_____

Signature: _____
Date: _____

_____ , was offered an opportunity to
(Name of Business Enterprise)

bid on the above-identified work on _____ by _____
(Date) (Source)

The above statement is a true and accurate account of why I did not submit a bid on this project.

_____
(Signature of Disadvantaged Business Enterprise)

_____
(Title)

Date: _____

A SEPARATE UNAVAILABILITY CERTIFICATION FORM SHOULD BE COMPLETED FOR EACH DBE.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

BIDDERS CHECKLIST FOR INFORMATION ONLY

MBTA Contract No. and Title: A27CN02 LIGHT RAIL ACCESSIBILITY PROGRAM, BROOKLINE VILLAGE STATION & LONGWOOD STATION

This checklist is provided to assist Bidders in determining that required signatures and submittals are included along with the Bid Proposal.

	ITEM	REFERENCE PAGE	ACTION REQUIRED
1	Addenda acknowledged	**14B**	Acknowledge all addenda issued
2	Letter of Commitment furnished from proposed surety	**14B**	Attach letter
3	Certification pertaining to ineligible contractors completed	**16B**	Bidder's authorized signature
4	Right-To-Know law Certification	**22B**	Bidder's authorized signature
5	Certification of Dumping Facilities completed	**23B**	Data and Bidder's authorized signature
6	Certification of Examination of Available Subsurface Data completed completed	**N/A**	Completed and Bidder's authorized signature
7	Bid signature(s) including EEO certification and DBE assurance	**17B**	Bidder's authorized signature
8	Bidder's data including joint venture authorization	**18B AND 19B**	Furnish data
9	Required proposal guarantee (bid deposit furnished)	**17B**	Attach amount as indicated
10	Affidavit of non-collusion Completed	**20B**	Bidder's authorized signature (notarized)
11	Forms for participation by DBE Completed	**30B through 33B**	Furnish information and authorized signatures
12	DBE's Affidavit and most recent certification	**32B**	Completed Affidavit and attach DBE certification
13	Buy America Certificate Completed	**21B**	Data and Bidder's authorized signature
14	Certification relating to Debarment, Suspension, ineligibility, and Voluntary exclusion	**24 through 27B**	Bidder's authorized signature
15	Certification of restrictions on lobbying	**28B**	Bidder's authorized signature
16	Certification of Year 2000 Compliance	**N/A**	Bidder's authorized signature
17	Certification of construction Equipment Standard Compliance	**29B**	Bidder's authorized signature

NOTE: **Disadvantaged Business Enterprise (DBE) stated goal is 16%.**

Minority Manpower Utilization (MMU) percent is 5%.

NA = Not Applicable

Female Construction Workforce: 6.9% per trade

CONTRACT AND BOND FORMS

CONTRACT

Individual Form 2C - 3C

Corporation Form 4C - 5C

PERFORMANCE BOND 6C -7C

LABOR AND MATERIALS PAYMENT BOND 8C

NOTE: Bond Forms are not to be filled out when submitting Bid Form.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

CONTRACT

Clause 1. - This agreement, made this _____day of_____ in the year two thousand and _____ between the Massachusetts Bay Transportation Authority, and_____herein called the Contractor.

Clause 2. - Witnesseth, that the parties to this agreement, each in consideration of the agreements on the part of the other herein contained, do hereby agree, the Massachusetts Bay Transportation Authority for itself, and said Contractor for himself/themselves and his/their heirs, executors, administrators and assigns, as follows:

The Contractor agrees to furnish all equipment, machinery, tools and labor, to furnish and deliver all materials required to be furnished and delivered in and about the improvement and to do and perform all work under Contract A27CN02 in strict conformity with the provisions herein contained and of the Notice to Bidders, Bid Form, Supplementary Conditions, Addenda, and Specifications hereto attached and with plans referred to therein. All Specifications, Supplementary Conditions, Plans, Notice to Bidders, Addenda, and Bid Form are hereby specifically made a part of this contract as fully and to the same effect as if the same had been set forth at length herein.

Clause 3. - In consideration of the foregoing premises the Massachusetts Bay Transportation Authority agrees to pay as full compensation for everything furnished and done by the Contractor under this Contract, including all work required but not shown on the plans for the items herein mentioned, and also for all loss of damage arising out of the nature of the work aforesaid, or from the action of the elements (except as excluded in the Standard Specifications, Section 00700, Article 5.19, or the Supplementary Conditions thereto) or from any delay or from any unforeseen obstruction or difficulty encountered in the prosecution of the work, and for all risks of every description in connection with the work, and for all expenses incurred by or in consequence of the suspension or discontinuance of the work as herein specified, and for well and faithfully completing the work, and the whole thereof, as herein provided, such prices as are set out in the accompanying Bid Form and for all work required, for which there is no item in the Bid Form, such compensation as is provided for in the aforesaid Specifications.

In witness whereof, the said Contractor has/have hereto set his/their hands and seals, and the said Massachusetts Bay Transportation Authority has executed these present by its authorized representatives on the year and day above written.

By _____

_____

_____

_____ Contractor

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

BY:

_____

Daniel A. Grabauskas
General Manager

APPROVED AS TO FORM:

_____

William A. Mitchell, Jr.
General Counsel

S&R CONSTRUCTION ENTERPRISES
NEWTON, NH

Clerk Certificate

Authorization to Sign Contract

At a meeting of the Board of Trustees/Directors of S & R Construction Enterprises held on June 21, 2007 at which all directors were present or waived notice, it was VOTED that Stephen Early, President, be and hereby is authorized to execute contracts and bonds in the name and behalf of said Company, and affix its corporate seal thereto; and such execution of any contract or obligation in this Company's name on its behalf by such Stephen Early, under seal of the Company, shall be valid and binding upon this Company.

A true copy,

ATTEST: _____
President, Clerk & Secretary
Stephen Early
S&R Construction Enterprises

Place of Business: 185 South Main Street – PO Box 509
Newton, NH 03858

I hereby certify that I am the President, Clerk and Secretary of S & R Construction Enterprises and that **Stephen Early** is the duly elected designated signer of said Company, and that the above vote has not been amended or rescinded and remains in full force and effect as of this date.

_____ Corporate Seal
President, Clerk & Secretary
Stephen Early
S&R Construction Enterprises

Commonwealth of Massachusetts

_____ Notary Seal
Denise DiMento, Notary Public
My Commission Expires 3/21/2008

(Corporation Form)

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

CONTRACT

Clause 1. - This agreement, made this SIXTH day of AUGUST, in the year two thousand and SEVEN between the Massachusetts Bay Transportation Authority, and S&R Construction Co., d/b/a S&R Construction Enterprises herein called the Contractor.

Clause 2. - Witnesseth, that the parties to this agreement, each in consideration of the agreement on the part of the other herein contained, do hereby agree, the Massachusetts Bay Transportation Authority for itself, and said Contractor for itself and its successors and assigns, as follows:

The Contractor agrees to furnish all equipment, machinery, tools and labor, to furnish and deliver all materials required to be furnished and delivered in and about the improvement and to do and perform all work under and in strict conformity with the provisions herein contained and of the Notice to Bidders, Bid Form, Supplementary Conditions, Addenda, and Specifications hereto attached, and with the plans referred to therein. All plans, Specifications, Supplementary Conditions, Notice to Bidders, Addenda, and Bid Form are hereby specifically made a part of this contract as fully and to the same effect as if the same had been set forth at length herein.

Clause 3. - In consideration of the foregoing premises the Massachusetts Bay Transportation Authority agrees to pay and the Contractor agrees to receive as full compensation for everything furnished and done by the Contractor under this contract, including all work required but not shown on the plans for the items herein mentioned, and also for all loss or damage arising out of the nature of the work aforesaid, or from the action of the elements (except as excluded in the Standard Specifications, Section 00700, Article 5.19 or the Supplementary Conditions thereto) or from any delay or from an unforeseen obstruction or any difficulty encountered in the prosecution of the work, and for all risks of every description connected with the work, and for all expenses incurred by or in consequence of the suspension or discontinuance of the work as herein specified, and for well and faithfully completing the work, and the whole thereof, as herein provided, such prices as are set out in the accompanying Bid Form, and for all work required, for which there is no item in the Bid Form, such compensation as is provided for in the aforesaid Specifications.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

Board of Directors
Transportation Building
Ten Park Plaza
Boston, Massachusetts 02116

I, Yolanda L. Glasper, Recording Secretary of the Board of Directors of the Massachusetts Bay Transportation Authority, hereby certify that, at a Meeting of the Board of Directors of the Massachusetts Bay Transportation Authority, acting under the provisions of Chapter 161A of the General Laws, as amended to date, duly called and held on the third day of May 2007, at which a quorum was present, the following Vote was adopted:

> **VOTED:** That the General Manager be, and he hereby is, authorized to execute in the name of and on behalf of the Authority, subject to the approval of the Executive Office of Transportation and Public Works, and in a form approved by the General Counsel, MBTA Contract No. A27CN02, Light Rail Accessibility Program D Line, Brookline Village Station & Longwood Station, Brookline, Massachusetts, with S&R Construction Company, Inc., d/b/a S&R Construction Enterprises, for a sum not to exceed $1,979,755.00, based upon a schedule of unit, lump sum and allowance bid prices, said contractor being the lowest responsible and eligible bidder in response to requests for sealed proposals.

A true copy.

Attest: May 4, 2007

Yolanda L. Glasper
Recording Secretary
Board of Directors of the
Massachusetts Bay Transportation
Authority

Massachusetts Bay Transportation Authority

Deval L. Patrick
Governor

Timothy P. Murray
Lt. Governor

Bernard Cohen
Secretary and MBTA Chairman

Daniel A. Grabauskas
General Manager

MBTA ADMINISTRATION
CONTRACT

May 9, 2007 2007 MAY -4 P 2:56

Mr. Bernard Cohen
Secretary and MBTA Chairman
Executive Office of Transportation and Public Works
Ten Park Plaza
Boston, Massachusetts 02116

Re: Massachusetts General Laws – Chapter 161A
Section 3(f) Request for Contract Approval

Dear Secretary Cohen:

Pursuant to the above-captioned matter, which requires the MBTA to obtain Executive Office of Transportation and Public Works approval for any agreements entered into for the construction or acquisition of mass transportation facilities or equipment of more than $1million, the MBTA hereby submits, for the approval of the Secretary of EOTPW, the following contract award and supporting documentation:

Authorization for the execution of MBTA Contract No. A27CN02, Light Rail Accessibility Program D Line, Brookline Village Station & Longwood Station, Brookline, MA, with S&R Construction Company, Inc. d/b/a S&R Construction Enterprises, for a sum not to exceed $1,979,755.00.

Award is based upon applicable Federal Procurement Regulations and guidelines, MBTA Regulations and Procedures, and Massachusetts General Laws regarding public construction contracts.

If your approval is hereby granted, kindly sign below and return a copy of letter to the undersigned.

Sincerely,

Daniel A. Grabauskas
General Manager

APPROVED:
Bernard Cohen
Secretary and MBTA Chairman

In witness whereof, the said Contractor has caused these presents to be signed in its name and behalf and its corporate seal to be hereto affixed by

Stephen Early Its President

and _____ its _____

thereto duly authorized, and the said Massachusetts Bay Transportation Authority has executed these presents by its authorized representatives on the year and day above written.

By: _____

S&R Construction Co., d/b/a S&R Construction Enterprises Contractor

_____

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

BY

_____

Daniel A. Grabauskas, General Manager

APPROVED AS TO FORM:

_____

William A. Mitchell, Jr.
General Counsel

In witness whereof, the said Contractor has caused these presents to be signed in its name and behalf and its corporate seal to be hereto affixed by

Stephen Early Its President

and _____ its _____

thereto duly authorized, and the said Massachusetts Bay Transportation Authority has executed these presents by its authorized representatives on the year and day above written.

By: _____

S&R Construction Co., d/b/a S&R Construction Enterprises Contractor

_____

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

BY

ORIGINAL SIGNED BY

_____

Daniel A. Grabauskas, General Manager

APPROVED AS TO FORM:

ORIGINAL SIGNED BY

_____

William A. Mitchell, Jr.
General Counsel

PERFORMANCE BOND

Bond #BCN1818063

KNOW ALL MEN BY THESE PRESENTS: that S&R Construction Co., d/b/a S&R Construction Enterprises
(Insert full name and address and legal title of Contractor)
185 South Main Street, Newton, NH 03853
as Principal, hereinafter called Contractor, and The Hanover Insurance Company, 440 Lincoln St, Worcester, MA
(Here insert full name and address or legal title of Surety)

as Surety, hereinafter called Surety, are held and firmly bound unto Massachusetts Bay Transportation Authority as Obligee, hereinafter called Authority, in the amount of One Million Nine Hundred Seventy-Nine Thousand Seven Hundred Fifty-Five Dollars **($1,979,755.00)** for the payment whereof Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS,
Contractor has by written agreement dated AUGUST 6, 2007, entered into a contract with the Authority for MBTA Contract No.A27CN02 which contract is by reference made a part hereof, and is hereinafter referred to as the Contract.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if Contractor shall promptly and faithfully perform said Contract, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

The Surety hereby waives notice of any alteration or extension of time made by the Authority.

Whenever Contractor shall be, and is declared by the Authority to be in default under the Contract, the Authority having performed Authority's obligations thereunder, the Surety may promptly remedy the default, or shall promptly

1) Complete the Contract in accordance with it terms and conditions, or

2) Obtain a bid or bids for completing the Contract in accordance with its terms and conditions, and upon determination by Surety of the lowest responsible bidder, or, if the Authority elects, upon determination by the Authority and the Surety jointly of the lowest responsible bidder, arrange for a contract between such bidder and the Authority, and make available as Work progresses (even though there should be a default or a succession of defaults under the contract or contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the balance of the contract price; but not exceeding, the amount set forth in the first paragraph hereof. The term "balance of the contract price," as used in this paragraph, shall mean the total amount payable by the Authority to Contractor under the Contract and any amendments thereto, less the amount properly paid by the Authority to Contractor.

Any suit under this bond must be instituted before the expiration of two (2) years from the date on which final payment under the Contract falls due.

No right of action shall accrue on this bond to or for the use of any person or corporation other than the Authority or the heirs, executors, administrators or successors of the Authority.

Signed and sealed this 6th day of AUGUST 2007.

WITNESS: PRINCIPAL:

S&R Construction Co.,d/b/a
S&R Construction Enterprises

_____ **(Seal)**

_____
(Title)

WITNESS: SURETY:

The Hanover Insurance Company

_____ **(Seal)**

* _____
(Title) Attorney-in-fact
Beryl A. Finn

***Attach hereto proof of authority of officers or agents to sign bond.**

Certified Copy Void Without Hanover Watermark

This Power of Attorney may not be used to execute any bond with an inception date after May 1, 2008

THE HANOVER INSURANCE COMPANY
MASSACHUSETTS BAY INSURANCE COMPANY
CITIZENS INSURANCE COMPANY OF AMERICA

POWERS OF ATTORNEY
CERTIFIED COPY

KNOW ALL MEN BY THESE PRESENTS: That THE HANOVER INSURANCE COMPANY and MASSACHUSETTS BAY INSURANCE COMPANY, both being corporations organized and existing under the laws of the State of New Hampshire, and CITIZENS INSURANCE COMPANY OF AMERICA, a corporation organized and existing under the laws of the State of Michigan, do hereby constitute and appoint

Michael F. Carney, Adam W. DeSanctis, Christine B. Gallagher, David A. Boutiette, Gregory D. Juwa, Michael T. Gilbert James J. Axon, Byran F. Juwa, Wilder Parks, Jr. , Beryl A. Finn and/or Paul A. Patalano

of **Woburn, MA** and each is a true and lawful Attorney(s)-in-fact to sign, execute, seal, acknowledge and deliver for, and on its behalf, and as its act and deed any place within the United States, or, if the following line be filled in, only within the area therein designated

any and all bonds, recognizances, undertakings, contracts of indemnity or other writings obligatory in the nature thereof, as follows:
Any such obligations in the United States, not to exceed Twenty Million and No/100 ($20,000,000) in any single instance

and said companies hereby ratify and confirm all and whatsoever said Attorney(s)-in-fact may lawfully do in the premises by virtue of these presents. These appointments are made under and by authority of the following Resolution passed by the Board of Directors of said Companies which resolutions are still in effect:

"RESOLVED, That the President or any Vice President, in conjunction with any Assistant Vice President, be and they are hereby authorized and empowered to appoint Attorneys-in-fact of the Company, in its name and as its acts, to execute and acknowledge for and on its behalf as Surety any and all bonds, recognizances, contracts of indemnity, waivers of citation and all other writings obligatory in the nature thereof, with power to attach thereto the seal of the Company. Any such writings so executed by such Attorneys-in-fact shall be as binding upon the Company as if they had been duly executed and acknowledged by the regularly elected officers of the Company in their own proper persons." (Adopted October 7, 1981 - The Hanover Insurance Company; Adopted April 14, 1982 – Massachusetts Bay Insurance Company; Adopted September 7, 2001 - Citizens Insurance Company of America)

IN WITNESS WHEREOF, THE HANOVER INSURANCE COMPANY, MASSACHUSETTS BAY INSURANCE COMPANY and CITIZENS INSURANCE COMPANY OF AMERICA have caused these presents to be sealed with their respective corporate seals, duly attested by a Vice President and an Assistant Vice President, this **8th** day of **August, 2006**.

THE HANOVER INSURANCE COMPANY
MASSACHUSETTS BAY INSURANCE COMPANY
CITIZENS INSURANCE COMPANY OF AMERICA

Richard M. Van Steenburgh, Vice President

Paul F. Carleo, Assistant Vice President

THE COMMONWEALTH OF MASSACHUSETTS)
COUNTY OF WORCESTER) ss.

On this **8th** day of **August 2006**, before me came the above named Vice President and Assistant Vice President of The Hanover Insurance Company, Massachusetts Bay Insurance Company and Citizens Insurance Company of America, to me personally known to be the individuals and officers described herein, and acknowledged that the seals affixed to the preceding instrument are the corporate seals of The Hanover Insurance Company Massachusetts Bay Insurance Company and Citizens Insurance Company of America, respectively, and that the said corporate seals and their signatures as officers were duly affixed and subscribed to said instrument by the authority and direction of said Corporations.

BARBARA ANN GARLICK
Notary Public
Commonwealth of Massachusetts
My Commission Expires Nov 3, 2011

Barbara A. Garlick
Notary Public

My commission expires on November 3, 2011

I, the undersigned Assistant Vice President of The Hanover Insurance Company, Massachusetts Bay Insurance Company and Citizens Insurance Company of America, hereby certify that the above and foregoing is a full, true and correct copy of the Original Power of Attorney issued by said Companies, and do hereby further certify that the said Powers of Attorney are still in force and effect.

This Certificate may be signed by facsimile under and by authority of the following resolution of the Board of Directors of The Hanover Insurance Company, Massachusetts Bay Insurance Company and Citizens Insurance Company of America.

"RESOLVED, That any and all Powers of Attorney and Certified Copies of such Powers of Attorney and certification in respect thereto, granted and executed by the President or any Vice President in conjunction with any Assistant Vice President of the Company, shall be binding on the Company to the same extent as if all signatures therein were manually affixed, even though one or more of any such signatures thereon may be facsimile." (Adopted October 7, 1981 - The Hanover Insurance Company; Adopted April 14, 1982 Massachusetts Bay Insurance Company; Adopted September 7, 2001 - Citizens Insurance Company of America)

GIVEN under my hand and the seals of said Companies, at Worcester, Massachusetts, this day of , 20 .

THE HANOVER INSURANCE COMPANY
MASSACHUSETTS BAY INSURANCE COMPANY
CITIZENS INSURANCE COMPANY OF AMERICA

Charles T. Wells, Assistant Vice President

Certified Copy Void Without Hanover Watermark

LABOR AND MATERIALS PAYMENT BOND

Bond #BCN1818063

Know all men by these presents, that S&R Construction Co., d/b/a S&R Construction Enterprises, 185 South Main Street, Newton, NH 03853 as principal, and The Hanover Insurance Company 440 Lincoln St.Worcester, MA 01653 as surety, are held and firmly bond unto the Massachusetts Bay Transportation Authority (MBTA) in the sum of One Million Nine Hundred Seventy-Nine Thousand Seven Hundred Fifty-Five Dollars **($1,979,755.00)** lawful money of the United States of America, to be paid to the MBTA, for which payments, well and truly to be made, we bind ourselves, our respective heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

Whereas, the said principal has made a contract with the MBTA for the construction of MBTA Contract No. A27CN02, Light Rail Accessibility Improvements, Brookline Village and Longwood Stations, Brookline, Massachusetts.

Now the condition of this obligation is such that if the principal and its subcontracts shall pay for all labor performed or furnished and for all materials and equipment used or employed in said contract and in: any and all duly authorized modifications, alterations, extensions, changes or additions thereto, all as set forth in Massachusetts General Laws, Chapter 149 Section 29 and Chapter 30 Section 39A, then this obligation shall become null and void; otherwise it shall remain in full force and virtue, the rights and obligations of the principal, the surety and claimants being as set forth in said M.G.L. c. 149 Section 29.

The surety hereby stipulates and agrees that no change or modification in, or extension of time, or alterations or additions to the contract or in the work shall in any way affect its obligations on this Bond and does hereby waive notice of any such change, modification, extension, alteration or addition.

In witness whereof we hereunto set our hands and seals this _____ day of _____ 20_.

S&R Construction Co.,d/b/a S&R Construction Enterprises
(Print Name of General Contractor/ Principal)

By: _____ President
(Signature - Title)

The Hanover Insurance Company (Seal)
(Print Name of Surety)

By : _____
(Signature - Title) Beryl A. Finn, Attorney-in-fact

Business Address 440 Lincoln St, Worcester, MA 01653

Countersigned MA Resident Agent by _____

Address 36 Cummings Park, Woburn, MA 01801

Telephone No. 781-935-8480

Attach herewith proof of authority of officers or agents to sign the bond.

Certified Copy Void Without Hanover Watermark

This Power of Attorney may not be used to execute any bond with an inception date after May 1, 2008

THE HANOVER INSURANCE COMPANY
MASSACHUSETTS BAY INSURANCE COMPANY
CITIZENS INSURANCE COMPANY OF AMERICA

POWERS OF ATTORNEY
CERTIFIED COPY

KNOW ALL MEN BY THESE PRESENTS: That THE HANOVER INSURANCE COMPANY and MASSACHUSETTS BAY INSURANCE COMPANY, both being corporations organized and existing under the laws of the State of New Hampshire, and CITIZENS INSURANCE COMPANY OF AMERICA, a corporation organized and existing under the laws of the State of Michigan, do hereby constitute and appoint

Michael F. Carney, Adam W. DeSanctis, Christine B. Gallagher, David A. Boutiette, Gregory D. Juwa, Michael T. Gilbert James J. Axon, Byran F. Juwa, Wilder Parks, Jr. , Beryl A. Finn and/or Paul A. Patalano

of **Woburn, MA** and each is a true and lawful Attorney(s)-in-fact to sign, execute, seal, acknowledge and deliver for, and on its behalf, and as its act and deed any place within the United States, or, if the following line be filled in, only within the area therein designated

any and all bonds, recognizances, undertakings, contracts of indemnity or other writings obligatory in the nature thereof, as follows:
Any such obligations in the United States, not to exceed Twenty Million and No/100 ($20,000,000) in any single instance

and said companies hereby ratify and confirm all and whatsoever said Attorney(s)-in-fact may lawfully do in the premises by virtue of these presents. These appointments are made under and by authority of the following Resolution passed by the Board of Directors of said Companies which resolutions are still in effect:

"RESOLVED, That the President or any Vice President, in conjunction with any Assistant Vice President, be and they are hereby authorized and empowered to appoint Attorneys-in-fact of the Company, in its name and as its acts, to execute and acknowledge for and on its behalf as Surety any and all bonds, recognizances, contracts of indemnity, waivers of citation and all other writings obligatory in the nature thereof, with power to attach thereto the seal of the Company. Any such writings so executed by such Attorneys-in-fact shall be as binding upon the Company as if they had been duly executed and acknowledged by the regularly elected officers of the Company in their own proper persons." (Adopted October 7, 1981 - The Hanover Insurance Company; Adopted April 14, 1982 – Massachusetts Bay Insurance Company; Adopted September 7, 2001 - Citizens Insurance Company of America)

IN WITNESS WHEREOF, THE HANOVER INSURANCE COMPANY, MASSACHUSETTS BAY INSURANCE COMPANY and CITIZENS INSURANCE COMPANY OF AMERICA have caused these presents to be sealed with their respective corporate seals, duly attested by a Vice President and an Assistant Vice President, this **8th** day of **August, 2006**.

THE HANOVER INSURANCE COMPANY
MASSACHUSETTS BAY INSURANCE COMPANY
CITIZENS INSURANCE COMPANY OF AMERICA

Richard M. Van Steenburgh, Vice President

Paul F. Carleo, Assistant Vice President

THE COMMONWEALTH OF MASSACHUSETTS)
COUNTY OF WORCESTER) ss.

On this **8th** day of **August 2006**, before me came the above named Vice President and Assistant Vice President of The Hanover Insurance Company, Massachusetts Bay Insurance Company and Citizens Insurance Company of America, to me personally known to be the individuals and officers described herein, and acknowledged that the seals affixed to the preceding instrument are the corporate seals of The Hanover Insurance Company Massachusetts Bay Insurance Company and Citizens Insurance Company of America, respectively, and that the said corporate seals and their signatures as officers were duly affixed and subscribed to said instrument by the authority and direction of said Corporations.

BARBARA ANN GARLICK
Notary Public
Commonwealth of Massachusetts
My Commission Expires Nov 3, 2011

Barbara A. Garlick
Notary Public

My commission expires on November 3, 2011

I, the undersigned Assistant Vice President of The Hanover Insurance Company, Massachusetts Bay Insurance Company and Citizens Insurance Company of America, hereby certify that the above and foregoing is a full, true and correct copy of the Original Power of Attorney issued by said Companies, and do hereby further certify that the said Powers of Attorney are still in force and effect.

This Certificate may be signed by facsimile under and by authority of the following resolution of the Board of Directors of The Hanover Insurance Company, Massachusetts Bay Insurance Company and Citizens Insurance Company of America.

"RESOLVED, That any and all Powers of Attorney and Certified Copies of such Powers of Attorney and certification in respect thereto, granted and executed by the President or any Vice President in conjunction with any Assistant Vice President of the Company, shall be binding on the Company to the same extent as if all signatures therein were manually affixed, even though one or more of any such signatures thereon may be facsimile." (Adopted October 7, 1981 - The Hanover Insurance Company; Adopted April 14, 1982 Massachusetts Bay Insurance Company; Adopted September 7, 2001 - Citizens Insurance Company of America)

GIVEN under my hand and the seals of said Companies, at Worcester, Massachusetts, this day of , 20

THE HANOVER INSURANCE COMPANY
MASSACHUSETTS BAY INSURANCE COMPANY
CITIZENS INSURANCE COMPANY OF AMERICA

Charles T. Wells, Assistant Vice President

Certified Copy Void Without Hanover Watermark

INSURANCE CERTIFICATES

ACORD CERTIFICATE OF LIABILITY INSURANCE

OP ID BF S&RCO-2 | DATE (MM/DD/YYYY) 06/20/07

PRODUCER

DeSanctis Insurance Agcy, Inc.
36 Cummings Park
Woburn MA 01801
Phone: 781-935-8480 Fax: 781-933-5645

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

INSURED

S&R Construction Co., Inc. dba
S&R Construction Enterprises
P.O. Box 509
185 South Main Street
Newton NH 03858

INSURERS AFFORDING COVERAGE		NAIC #
INSURER A:	Acadia Insurance Company	
INSURER B:	American Home Assurance Co.	
INSURER C:		
INSURER D:		
INSURER E:		

COVERAGES

THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. AGGREGATE LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	ADD'L INSRD	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS	
A		GENERAL LIABILITY X COMMERCIAL GENERAL LIABILITY CLAIMS MADE X OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: POLICY X PRO-JECT LOC	CPA018521310	06/30/06	06/30/07	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG	$ 1,000,000 $ 250,000 $ 5,000 $ 1,000,000 $ 2,000,000* $ 2,000,000
A		AUTOMOBILE LIABILITY ANY AUTO X ALL OWNED AUTOS SCHEDULED AUTOS X HIRED AUTOS X NON-OWNED AUTOS	CAA018521410	06/30/06	06/30/07	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)	$ 1,000,000 $ $ $
		GARAGE LIABILITY ANY AUTO				AUTO ONLY - EA ACCIDENT OTHER THAN AUTO ONLY: EA ACC AGG	$ $ $
A		EXCESS/UMBRELLA LIABILITY X OCCUR CLAIMS MADE DEDUCTIBLE X RETENTION $ NONE	CUA018521510	06/30/06	06/30/07	EACH OCCURRENCE AGGREGATE	$ 10,000,000 $ 10,000,000 $ $ $
B		WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? If yes, describe under SPECIAL PROVISIONS below	WC1769079 MA, NH	03/01/07	03/01/08	X WC STATU-TORY LIMITS OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	 $ 500000 $ 500000 $ 500000
A		OTHER Builders Risk	TBA	06/19/07	06/19/08	BR Ded.	$1,979,755 $1,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES / EXCLUSIONS ADDED BY ENDORSEMENT / SPECIAL PROVISIONS

Additional insureds limits are no greater than required by written contract. MBTA is additional insured as respects GL, Auto, Umbrella, Pollution and Builders Risk Policies on primary and non-contributory basis. Waiver of subrogation is in favor the MBTA. See Page 2

CERTIFICATE HOLDER

MBTA.-1

Massachusetts Bay
Transportation Authority
Ten Park Plaza
Boston MA 02173

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING INSURER WILL ENDEAVOR TO MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO DO SO SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE INSURER, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE

ACORD 25 (2001/08)

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JK - P. Hoffman — 6/22/07

MBTA Contract No. A27CN02, Light Rail Accessibility Program, D Line,
Brookline Village Station and Longwood Stations, Brookline, MA

ACORD CERTIFICATE OF LIABILITY INSURANCE

OP ID MB S&RCO-2 | DATE (MM/DD/YYYY) 06/26/07

PRODUCER

DeSanctis Insurance Agcy, Inc.
36 Cummings Park
Woburn MA 01801
Phone: 781-935-8480 Fax: 781-933-5645

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

INSURED

S&R Construction Co.,Inc.
S&R Construction Enterprises
185 South Main Street
Newton NH 03858

INSURERS AFFORDING COVERAGE	NAIC #
INSURER A: Everest Indemnity Insurance	
INSURER B:	
INSURER C:	
INSURER D:	
INSURER E:	

COVERAGES

THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. AGGREGATE LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	ADD'L INSRD	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS	
A		GENERAL LIABILITY COMMERCIAL GENERAL LIABILITY CLAIMS MADE [X] OCCUR [X] POLL/Brookline & [X] Longwood Stations GEN'L AGGREGATE LIMIT APPLIES PER: [X] POLICY [ ] PRO-JECT [ ] LOC	TBA	06/26/07	06/26/08	EACH OCCURRENCE	$ 1,000,000
						DAMAGE TO RENTED PREMISES (Ea occurence)	$
						MED EXP (Any one person)	$
						PERSONAL & ADV INJURY	$ ----------
						GENERAL AGGREGATE	$ 5,000,000
						PRODUCTS - COMP/OP AGG	$ ----------
		AUTOMOBILE LIABILITY ANY AUTO ALL OWNED AUTOS SCHEDULED AUTOS HIRED AUTOS NON-OWNED AUTOS				COMBINED SINGLE LIMIT (Ea accident)	$
						BODILY INJURY (Per person)	$
						BODILY INJURY (Per accident)	$
						PROPERTY DAMAGE (Per accident)	$
		GARAGE LIABILITY ANY AUTO				AUTO ONLY - EA ACCIDENT	$
						OTHER THAN AUTO ONLY: EA ACC	$
						AGG	$
		EXCESS/UMBRELLA LIABILITY OCCUR CLAIMS MADE DEDUCTIBLE RETENTION $				EACH OCCURRENCE	$
						AGGREGATE	$
							$
							$
							$
		WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? If yes, describe under SPECIAL PROVISIONS below				WC STATU-TORY LIMITS / OTH-ER	
						E.L. EACH ACCIDENT	$
						E.L. DISEASE - EA EMPLOYEE	$
						E.L. DISEASE - POLICY LIMIT	$
		OTHER					

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES / EXCLUSIONS ADDED BY ENDORSEMENT / SPECIAL PROVISIONS

"ADDITIONAL INSURED LIMITS ARE NO GREATER THAN THOSE REQUIRED BY WRITTEN CONTRACT". MBTA Light Rail Accessibility Program @ Brookline Village and Longwood Stations, Contract #A27CN02. Certificate holder is an Additional Insured w/ WOS as indicated in written contract.

CERTIFICATE HOLDER

MBTA.-1

MBTA
Ten Park Plaza
Boston MA 02173

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING INSURER WILL ENDEAVOR TO MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO DO SO SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE INSURER, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE

Marc A. Bujnon

ACORD 25 (2001/08)

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OK - P. Hoffman - 6/27/07

SUPPLEMENTARY CONDITIONS

FOREWORD

The Authority's Standard Specifications, BIDDING AND CONTRACT REQUIREMENTS AND DIVISION 1 - GENERAL REQUIREMENTS, dated November 1983, as amended, will be applicable to this Contract, is incorporated by reference, and may be purchased from the Contract Administration office, Massachusetts Bay Transportation Authority, Transportation Building, 10 Park Plaza, Boston, Massachusetts 02116-3975, at a charge of $5.00 per copy which is not refundable.

Further Supplementing the Authority's Standard Specifications, Section 00700 - General Conditions, the following Supplementary Conditions will apply.

References to Article Numbers in the following Supplementary Conditions unless otherwise stated are to be the aforesaid Standard Specifications, Section 00700 - General Conditions. In case of conflict between these Supplementary Conditions and the aforesaid Standard Specifications, Section 00700 - General Conditions, these Supplementary Conditions will take precedence and shall govern.

The Supplementary Conditions are included herein to augment the Standard Specifications, Section 00700 - General Conditions, with additional information which is applicable to this project.

The enforcement of the requirements of any of the following Supplementary Conditions of the General Conditions shall not be construed as waiving any of the rights of the Authority contained in any of the other conditions of the Contract.

SUPPLEMENTARY CONDITIONS
TABLE OF CONTENTS

Paragraph	Title	Page
1.	ARTICLE 1 - DEFINITION OF TERMS	
	A. Article 1.01 - Definitions of Terms	SC - 1
2.	ARTICLE 2 - SCOPE OF WORK	
	A. Article 2.01 - Intent of Contract	SC - 1
3.	ARTICLE 3 - CONTROL OF WORK	
	A. Article 3.01 - Authority of the Engineer	SC - 1
4.	ARTICLE 4 - CONTROL OF MATERIALS	
	A. Article 4.02 - Certificates of Compliance	SC - 2
	B. Article 4.05 - Asbestos Materials	SC - 2
	C. Article 4.06 - Banned Materials	SC - 2
5.	ARTICLE 5 - LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC	
	A. Article 5.03 – Motor Vehicles	SC - 3
	B. Article 5.04 - Insurance Requirements	SC - 3
	C. Article 5.15 - Safety and First Aid Requirements	SC - 5
	D. Article 5.18 - Payment of Taxes	SC - 8
	E. Article 5.22 - Conflict of Interest	SC - 8
6.	ARTICLE 6 - PROSECUTION AND PROGRESS	
	A. Article 6.02 - Prosecution of Work	SC - 9
	B. Article 6.05 - Character of Workmen, Methods and Equipment	SC - 9
	C. Article 6.08 – Determination and Extension of Contract Time for Completion	SC - 9
	D. Article 6.11 - Termination for Convenience	SC - 10
7.	Minimum State Wage Rates	SC - 13
8.	Federal Transit Administration U.S.A. DOT Requirements	SC - 14
DD.	EQUAL EMPLOYMENT OPPORTUNITY (EEO)	
	STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY CONSTRUCTION CONTRACT SPECIFICATION	SC - 37
	APPENDIX NO. 1 - Goals and Timetables for Female and Minority Participation in the Construction Industry	SC - 43
	APPENDIX NO. 2 - The Commonwealth of Massachusetts Supplemental Equal Employment Opportunity Anti-Discrimination and Affirmative Action Program	SC - 44
	APPENDIX NO. 3 - Disadvantaged Business Enterprise Participation Provision	SC - 50

1. ARTICLE 1 - DEFINITION OF TERMS

A. Article 1.01 - DEFINITION OF TERMS

A. Add the following items to the list of definitions:

24 a. Design Engineer and/or Consultant (Gannett Fleming, Inc.) has been retained by the Authority as engineering consultant during the construction of Light Rail Accessibility Program, Brookline Village Station & Longwood Station, Contract A27CN02. The terms "Design Engineer" and "Consultant" are at times interchangeable.

2. ARTICLE 2 - SCOPE OF WORK

A. Article 2.01 - INTENT OF CONTRACT

Designate the existing paragraph as "A" and add the following new paragraph:

B. Work consists of, but is not limited to, furnishing labor, materials, and equipment for the complete and satisfactory execution of the work in conformance with the Contract Plans and Specifications for the general construction necessary to make Brookline Village and Longwood MBTA Green Line (D Line) stations fully accessible in compliance with the Americans with Disabilities Act (ADA) of 1990 and in support of the new MBTA Low Floor Vehicles (LFV). The Work includes phased demolition, construction, reconstruction, and relocation of the following systems: phased site work, landscaping, platforms, tactile platform edging, track crossings, curbs, sidewalks, fencing, utilities, ductwork, manholes, lighting systems, ramps, removing and resetting passenger shelters, site furnishings and station signage.

3. ARTICLE 3 - CONTROL OF WORK

A. Article 3.01 - AUTHORITY OF THE ENGINEER

Delete paragraph B in its entirety and replace with the following:

B. Attention of the Contractor is directed to the following limitations on the scope of the duties entrusted to the Engineer.

1. The Regulations of the Authority's Board of Directors state that the General Manager is authorized to approve, without prior authorization of the Board, issuance of Change Orders or Extra Work Orders, pursuant to any Agreement previously authorized by the Board or the General Manager, in a total amount not exceeding 7% or $500,000.00 above the contract price of such Agreement, whichever is greater; provided that if the issuance of any such Change Order or Extra Work Order would result in exceeding said 7% or $500,000.00 limitation or if the issuance of any one such Change Order or Extra Work Order would require an expenditure by the Authority of an amount exceeding $500,000.00, it shall not be issued without prior authorization of the Board.

2. The General Manager, as provided by the Regulations of the Board of Directors, has delegated to the Assistant General Manager for Design and Construction the power to approve, without prior authorization of the General Manager or the Board, the issuance of Change Orders or Extra Work Orders, pursuant to any agreement previously authorized by the Board or the General Manager, in a total amount not exceeding 7% or $100,000.00 above the contract price of such agreement, whichever is greater; provided that if the issuance of any such Change Order or Extra Work Order

would result in exceeding said 7% or $100,000.00 limitation or if the issuance of any one such Change Order or Extra Work Order would require an expenditure by the Authority of an amount exceeding $100,000.00, it shall not be issued without prior authorization.

3. The General Manager, as provided by the Regulations of the Board of Directors, has delegated to the Chief of Engineering and Construction the power to approve, without prior authorization of the General Manager or the Board, the issuance of Change Orders or Extra Work Orders, pursuant to any agreement previously authorized by the Board or the General Manager, in a total amount not exceeding 7% or $50,000.00 above the contract price of such agreement, whichever is greater; provided that if the issuance of any such Change Order or Extra Work Order would result in exceeding said 7% or $50,000.00 limitation or if the issuance of any one such Change Order or Extra Work Order would require an expenditure by the Authority of an amount exceeding $50,000.00, it shall not be issued without prior authorization.

4. The General Manager, as provided by the Regulations of the Board of Directors, has delegated to the Directors of Design and Construction, the power to approve, without prior authorization of the General Manager or the Board, the issuance of Change Orders or Extra Work Orders, pursuant to any Contract or other Agreement previously authorized by the Board or the General Manager, in a total amount not exceeding 7% or $25,000.00 above the contract price of such agreement, whichever is greater; provided that if the issuance of any such Change Order or Extra Work Order would result in exceeding said 7% or $25,000.00 limitation or if the issuance of any such Change Order or Extra Work Order would require an expenditure by the Authority of an amount exceeding $25,000.00, it shall not be issued, without prior authorization.

5. Employees of the Authority are not authorized to request work to be performed or service to be provided other than as specified above. The Authority will not accept any responsibility whatsoever for extra work performed for which there is no specific proper authorization.

4. ARTICLE 4 - CONTROL OF MATERIALS

A. Article 4.02 - CERTIFICATE OF COMPLIANCE

This Article shall be supplemented by addition of the following:

C. Certification of specification compliance shall be furnished for all materials and installation of same as specified throughout the construction specifications. (See sample Certificate of Compliance included on page SC-11.)

B. Add new Article 4.05 as follows:

4.05 ASBESTOS MATERIALS

Contractor shall not furnish or install asbestos or any material containing asbestos under this Contract.

C. Add new Article 4.06 as follows:

4.06 BANNED MATERIALS

A. Lead Paints: Contractor shall not furnish or install lead containing paint on any surface within the limits of the Contract. A lead containing paint is defined by the Consumer Product Safety

Commission's Lead Containing Paint Poisoning Prevention act of 1979 as any coating whose dried film contains greater than 0.06% by weight of lead

5. ARTICLE 5 - LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC

A. Article 5.03 - -MOTOR VEHICLES

This Article shall be supplemented by addition of the following:

D. All Diesel Construction Equipment must have emission control devices installed, such as oxidation catalysts or particulate filters on the exhaust system side of the diesel combustion engine equipment.

B. Article 5.04 - INSURANCE REQUIREMENTS

1. Delete paragraphs A through E in their entirety and replace with the following:

A. The Contractor shall carry Commercial General Liability Insurance for personal injury, bodily injury and property damage with limits not less than $1,000,000 per occurrence, $1,000,000 aggregate covering all work performed under this Contract. The insurance should include the following:

1. All operations.

2. Contractual liability.

3. Coverage for the so-called "X, C, U" hazards, i.e., collapse of building, blasting, and damage to underground property.

4. Completed operations hazard for a period of at least two years following acceptance by the Authority of the completed Contract.

5. Use of watercraft, aircraft when applicable.

B. Pollution Liability Insurance

1. The Contractor or his designated Subcontractor shall carry Pollution Liability in an amount not less than $1,000,000 per occurrence and $5,000,000 aggregate, for sudden and gradual occurrences arising out of the work being performed under this Contract including, but not limited to, all hazardous material identified under this Contract.

2. The Contractor shall designate the disposal site and furnish a Certificate of Insurance from the Disposal Facility for Environmental Impairment Liability insurance covering liability for sudden and accidental occurrences in the amount of not less than $3,000,000 per occurrence and $6,000,000 aggregate and shall also include liability for non sudden occurrences in the amount of not less than $5,000,000 per occurrence and $10,000,000 aggregate.

3. The Contractor shall designate the hauler and furnish a Certificate of Insurance from the hauler for Automobile Liability insurance with endorsement MCS90 for the liability arising out of the transportation of hazardous material with an amount not less than $5,000,000 annual aggregate.

4. Certificates of Insurance shall clearly state the hazardous materials exposure identified under the contract.

C. Automobile Liability Insurance - including the use of all vehicles: owned, leased, hired and non-owned, with limits not less than $1,000,000 combined single limit covering all work performed under the Contract.

D. Railroad Protective Insurance (Not Needed For this Contract)

E. The Contractor shall carry Worker's Compensation Insurance, including Employers Liability Insurance as provided by Massachusetts General Laws, Chapter 152, as amended, covering all work performed by him under the Contract.

F. The Contractor shall carry Umbrella Liability Coverage with limits of not less than $10,000,000 per occurrence, covering all work performed by him under this Contract.

G. The Contractor shall carry Builder's Risk Insurance ("All Risks' form) on a 100 percent completed value basis for the full insurable portion of such Work for the benefit of the Authority, the Contractor and all Subcontractors.

H. The required insurance coverages hereinbefore specified shall be placed with insurance companies licensed by the Massachusetts Division of Insurance to do business in the Commonwealth of Massachusetts and having a Best's rating of B+ or better, shall be taken out before the Contract is commenced and be kept in full force and effect throughout the term of the Contract, shall be primary to and non-contributory to any insurance or self-insurance maintained by the MBTA, and shall require that the MBTA be given at least 30 days advance written notice in the event of any cancellation or materially adverse change in coverage. All such required insurance, with the possible exception of Pollution Liability Insurance, shall be written on an occurrence basis form, as opposed to a claim made basis form. The MBTA shall be named as an additional insured under the Commercial General Liability, Automobile Liability, Umbrella, Pollution Liability, and Builder's Risk Insurance Policies. The Workers' Compensation and Employers' Liability Insurance Policies shall include a waiver of subrogation in favor of the MBTA which precludes these insurers from being able to make any subrogation claims against the MBTA. All such required insurance shall not contain any exclusions for acts of terrorism, and shall fully cover any acts of terrorism, irrespective of whether such acts of terrorism are caused by domestic or foreign terrorists, and irrespective of whether such acts of terrorism are certified or non-certified by the Secretary of the Treasury, in concurrence with the Secretary of State and the Attorney General of the United States, to be an act of terrorism pursuant to the federal Terrorism Risk Insurance Act of 2002. All such insurance as is required of the Contractor shall be provided by or on behalf of all subcontractors to cover their operations performed. The Contractor shall be held responsible for any modifications, deviations or omissions in the compliance with these requirements by the subcontractors. At the inception date of the Contract and throughout the term of the Contract, the MBTA shall be provided with certificates of insurance evidencing that such insurance policies are in place and provide coverage as required. The following statement affirming that coverage completely complies with contract requirements shall be included in the special items section of the certificate or in an attached special items addendum page:

> The aforementioned insurance coverages completely comply with Article 5.04 Insurance Requirements Paragraphs A - I of MBTA Contract No. A27CN02.

I. In the event it is determined during excavation or construction that an asbestos condition does exist, a Licensed Asbestos Specialist shall be employed by the Contractor to perform the asbestos containment and abatement work. Prior to asbestos containment and abatement work, the Contractor shall, through the Licensed Asbestos Specialists, obtain insurance in amounts and types specified by the Authority, naming the MBTA as an additional insured as its interest appears under this Contract. Payment for this work will be made in accordance with Division 1 - General Requirements, Section 01150, Article 1.05. PAYMENT FOR EXT

C. Article 5.15 - SAFETY AND FIRST AID REQUIREMENTS

Delete paragraphs A through D and replace with the following:

A. The Contractor shall have a full-time (all working hours/one each shift) **on-site** experienced Safety Supervisor/Representative, who's **sole** responsibility is on-site safety management. The Contractor shall submit, within five (5) working days after receipt of notification of contract award, to the Engineer (Authority Resident Engineer) a detailed site-specific Safety Program, including the name, experience, and qualifications of the Contractor's full-time, on site Safety Supervisor/Representative and alternate. In the absence of the Safety Representative (e.g. vacation, sick leave, short term shift work not exceeding two weeks) the contractor must assign a full time Authority approved alternate Safety Supervisor/Representative to this contract. All safety submittal's must be approved by the Engineer (MBTA Safety Department) prior to the start of construction. No work at the job site shall begin until the Engineer has reviewed and commented on the Contractor's safety program and safety representatives. Implementation and enforcement of the safety program for the forces of the Contractor and all subcontractors shall be the responsibility of the General Contractor.

B. The Contractor's full-time Safety Supervisor/Representative shall have a thorough knowledge of construction safety and OSHA regulations. If, in the opinion of the Engineer, the Contractor's safety representative is not effective in carrying out the assigned duties as described below, the Engineer may request, in writing, that the Contractor replace the safety representative.

Contractors Safety Supervisors/Representatives and alternate are classified into levels with their qualifications based upon the, extent of their construction safety supervisory experience and capabilities, and the nature of each individual contract. All contracts require a Class III Full-time Safety Supervisor/Representative unless otherwise specified. Qualifications for each classification shall include, at minimum:

Class I

Basic safety and health training (minimum requirement: successful completion of OSHA 10 hour Construction Safety and Health training course):

- Two years experience as a construction safety supervisor where safety was 100% of the position responsibility
- Working knowledge of safety regulations and hazard control measures
- Demonstrated ability to conduct safety training
- Working knowledge of safety specific contract hazardous work procedures Physically able to perform the job.

Class II

Five years experience as a construction safety supervisor, three of which include full-time on-site construction safety experience (minimum requirement: successful completion of OSHA 30 hour Construction Safety and Health training course):

- Specialized safety training relevant to the project
- Demonstrated ability in creating a safe work environment
- Working knowledge of safety regulations and hazard control measures
- Demonstrated ability to conduct safety training
- Working knowledge of safety specific contract hazardous work procedures
- Physically able to perform the job.

Class III

Seven years experience as a construction safety supervisor, five of which include full-time on-site construction safety experience (minimum requirement: successful completion OSHA 30 hour Construction Safety and Health or OSHA's Instructor #500 Training course):

- Specialized safety training relevant to the project
- Demonstrated ability in creating a safe work environment.
- Working knowledge of safety regulations and hazard control measures.
- Demonstrated ability to conduct safety training.
- Working knowledge of safety specific contract hazardous work procedures.
- Physically able to perform the job.

C. The duties of the Safety Supervisor/Representative shall include maintenance of the Contractor's safety program, enforcement of safe practices, and the use of safety equipment and personal protective equipment, and other such activities as may be required by OSHA and the Engineer to maintain job safety and accident prevention. The safety representative shall not be replaced, terminated, nor reassigned without the written approval of the Engineer. A minimum transition of two weeks shall occur. Vacancies in these positions must be filled within two weeks of the vacancy occurring. The Safety Representative shall be assigned full-time to the contract and shall not be utilized concurrently on any other MBTA contract or any other projects outside this MBTA contract.

D. Attention of the Contractor is, specifically directed to the General and Supplementary Conditions of this Contract, which shall be made a condition of each subcontract entered into pursuant to the Contract. Further, that the Contractor and any subcontractor shall not require any laborer or mechanic employed in performance of the Contract to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to health or safety, as determined under construction safety and health standards (Title 29, Code of Federal Regulations, Part 1518, Published in the Federal Register on April 17, 1971) promulgated by the United States Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (83 Stat. 96). This contract will require all contractors and subcontractor to comply one hundred percent (100%) with OSHA's fall protection standard.

E. The Authority may stop any work that it considers to be unsafe.

F. The Contractor shall notify the Engineer 48 hours prior to bringing in any hoisting equipment (cranes, etc.) on the Authority's property. Equipment must be inspected by the Engineer (MBTA Safety Department) before being used on the work site.

G. The Contractor shall assume full responsibility for the safety of all his work. He shall perform work in a manner that will insure the safety of personnel and the work; and not expose personnel and equipment to hazardous or potentially hazardous conditions. All work in the construction of the project shall comply with

the requirements of the U.S. Department of Labor Occupational Safety and Health Administration (OSHA) provisions, as well as those of State and local regulations. Safe breathing levels must conform to the Massachusetts Department of Environmental Projection (DEP) standards. In the case of conflict of regulations, the most stringent regulations shall apply.

H. The Contractor shall provide at the site such equipment and medical facilities as are necessary to supply first-aid service to any person who may be injured in the progress of the work. At least one individual member of the contractor's staff, properly qualified with current certification (Red Cross or equivalent) in basic first aid and cardiopulmonary resuscitation (CPR), must be continuously present, on the site at all times when work is in progress. This individual must also have a general knowledge regarding blood borne pathogens. First-aid equipment shall be complete in all respects. The Contractor shall also have standing arrangements for the removal and hospital treatment of any employee who may be injured or who may become ill.

I. The Contractor shall promptly report in writing to the Authority all accidents whatsoever arising out of or in connection with the performance of the work, whether on or adjacent to the site, which cause death, personal injury or property damage, giving full details and statements of witnesses. In addition, if death, or serious injuries or serious damages are caused, the accident shall be reported immediately by telephone to the Authority.

J. If any claim is made by any third person against the Contractor or any subcontractor on account of any accident, the Contractor shall promptly report the fact in writing to the Authority, giving full details of the claim.

K. 1. All workers employed by the Contractor or subcontractors who work within the MBTA property limits i.e. (Authority's stations, track area right-of-way on and/or adjacent to the power traction system, etc.) shall be required to attend a eight (8) hour safety awareness course at the Authority's Safety School. A Fifty dollar ($50.00) Administrative Service cost will be charged per attendee. This Administrative/ Service cost will be directly invoiced to the contractor by the Safety Department at the end of each month. The contractor shall remit this fee to the Authority within thirty (30) days of said invoice. The location and the time of such school will be at the sole discretion of the Authority. The purpose of this course is to make the Contractor's personnel aware of the particular hazards related to the Authority's operations. Re-certification is required every three years. This class is separate and in addition to the eight (8) hour Subway Operations Right-of-Way Safety Training.

2. All workers employed by the Contractor or subcontractors who work within the MBTA property limits i.e. (Authority's stations, track area right-of-way on and/or adjacent to the power traction system, etc.) shall be required to attend a one-day, eight-hour training class conducted by Subway Operations Training and the Safety Department. Attendees must successfully complete the Right of Way Safety Training in order to receive a Right of Way license. The license is valid for a two-year period after which the person must attend the Authority's Right of Way re-certification class. To register for the "Right of Way Safety" class, contact:

Supervisor and Chief Rules Examiner of Training
Cabot RTL Training
275 Dorchester Avenue, 2nd floor
Telephone: (617) 222-5377

3. **The Contractor shall certify that all workers employed at the worksite shall have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration at the time the employee begins work and who shall furnish documentation of successful completion of said course with the first certified payroll report for each employee.**

L. All personnel working on the project site, within the MBTA construction project limits are required to wear high visibility reflective orange safety vests, similar to the standard MBTA equipment. In addition, all personnel working in the MBTA track area or on the platform will require the use of MBTA flagman.

M. Work activities necessitating the traction power system (third rail and trolley wire) deenergization will require the services of an Authority power lineman on site at all times.

N. The Contractor will be required to comply with the applicable requirements of the Environmental Protection Agency's National Emission Standards for Hazardous Air Pollutants, Part 51, Chapter 1, Title 40, Code of Federal Regulations, Subpart B, effective April 6, 1973, and as amended October 5, 1975 (Published October 14, 1975, in the Federal Register), and also subpart M published in June 1984.

O. All equipment used by the contractor on Authority property must be inspected by the Engineer (MBTA System wide maintenance and Improvement representative) prior to use on the work site and shall not be used if considered unsafe or not conforming to Authority specifications. All contractor/subcontractor equipment (including hi-rail) operators must be trained, certified, and properly licensed for each specific piece of equipment they will operate. The contractor/subcontractor must keep a copy of the Manufacturers Operating Manual or instructions onboard the hi-rail equipment at all times. The contractor/subcontractor hi-rail vehicles must be equipped with and exhaust gas purifier, and the hi-rail equipment used shall comply with requirements of the hi-rail equipment manufacturer. Documentation of same must be readily available and provided to the Authority upon inspection. If the contractor/subcontractor equipment is involved in a derailment or a near miss incident or accident which caused injury or exposed personnel to injury and/or caused damage to Authority property, that equipment is subject to the Authority's Impound Policy/Procedure. Contractor equipment to be used on or in the vicinity of the tracks shall be in first-class condition, so as to positively prevent any failure that would cause delay in Authority operations or damage to its property or compromise the health and safety of personnel working on the project. Equipment shall not be placed or operated within fouling distance (15' from the centerline) of track without first obtaining the permission of the Authority.

P. The Authority will not compensate the Contractor for delays or denials to work when the Contractor is in violation of the above regulations.

Q. Heavy Equipment used in tunnel operations must utilize Fire Resistant hydraulic fluids and conform to OSHA 20 CFR 1926.800 (m)(8), and the Massachusetts Fire Prevention Regulations {527 CMR 1.03 (8)} and the Boston Fire Prevention Code {Section 1.05 (b)}.

D. Article 5.18 - PAYMENT OF TAXES

1. Paragraph B, last line:

Change the MBTA Sales Tax Exemption Number from E-000-015-909 to E-042-323-989.

E. Article 5.22 - CONFLICT OF INTEREST

costs incurred for the preservation, protection or disposition of the discontinued work.

b. When requested by the Engineer, the Contractor shall furnish itemized statements of the cost of the work performed and shall give the Engineer access to all accounts, bills and vouchers relating thereto and unless the Contractor, when requested, shall furnish such itemized statements and access to all accounts, bills and vouchers, he shall not be entitled to payment for the work for which such information is sought by the Engineer.

c. The Contractor shall not be paid and the Contractor shall not have any claims for loss of anticipated profits, for loss of expected reimbursement or for any increased expenses resulting directly or indirectly from the discontinuance of any or all work or from unbalanced allocations, among the contract items, of overhead expense on the part of the bidder and subsequent loss of expected reimbursement therefore or for any other cause.

d. The Contractor shall incorporate the provisions of this Article and provisions in its Contracts with each of its Subcontractors.

CERTIFICATE OF COMPLIANCE
(Manufacturer of Fabricated Material)

Date_____20____

WE HEREBY CERTIFY THAT _____
(Description, or Kind of Material)

Furnished to _____

For Use on_____ Federal No. _____
(Project No.)

In the Amount of
(Quantity Represented)

Identify by
(Label, Marking, Seal No., Consignment, or Waybill No.)

Shipped on_____20__ Delivered on_____20_____

Shipped via _____
(Method of Shipment, Car No., or Truck No.)

MEETS THE REQUIREMENTS OF THE PERTINENT PROJECT PLANS, SUPPLEMENTARY CONDITIONS AND SPECIFICATIONS OF THE MASSACHUSETTS BAY TRANSPORTATION AUTHORITY, IN ALL RESPECTS, PROCESSING, PRODUCT TESTING AND INSPECTION CONTROL OF RAW MATERIALS ARE IN CONFORMANCE WITH ALL APPLICABLE SPECIFICATIONS, DRAWINGS AND/OR STANDARDS OF ALL ARTICLES FURNISHED.

All records and documents pertinent to this certificate and not submitted herewith will be maintained available by the undersigned for a period of not less than three years from date of final payment by the MBTA.

(Manufacturer of Supplier)

Signed by_____

Title_____NOTARY STAMP
Notarized Signature of Person
having Legal Authority to bind the Supplier

INSTRUCTIONS
1. The above is a suitable sample of an acceptable certificate.
2. Certificate is to be submitted in triplicate to the Engineer prior to, or on delivery of, material.
3. The following regulation is applicable to all projects involving Federal Funds.

Section 1001 of Title 18 of the United States Code (Criminal Code and Criminal Procedure) is applicable to this statement. (Section 1001 of Title 18, among other things, provides that whoever knowingly and willfully makes or uses a document or writing containing any false, fictitious or fraudulent statement or entry, in any matter within the jurisdiction of any Department or Agency of the United States shall be fined not more than $10,000 or imprisoned not more than five years, or both).

7. MINIMUM STATE WAGE RATES

A. The minimum wage rates to be used for this Contract are shown on the schedules on the following pages. The rates shown on these schedules are the minimum to be paid during the life of the Contract. It is, therefore, the responsibility of bidders to inform themselves as to the local labor conditions such as the length of the work day and work week, overtime compensation, health and welfare contributions, labor supply and prospective changes or adjustment of rates. In the event of conflict between the schedules for any classifications, the greater amount for the classification shall prevail as the minimum wage rate.

B. If the Contractor finds it necessary during the progress of the work to secure a minimum wage rate for some additional classification, he shall make a request for such additional classification to the Authority, who in turn will obtain the additional classification and corresponding minimum wage rate from the State Department of Labor and Industries and advise the Contractor of the same. These additional classifications and minimum wage rates are then to be considered a part of the Contract, and the Contractor shall have no claim for additional compensation because of the additional classification and minimum wage rates.

C. Where a question arises as to the classification in the schedule of the Department of Labor and Industries in which any employee is to be included, the decision is to be made by the State Department of Labor and Industries, through their duly authorized representative.

D. Within three days from the date of the first advertisement or call for bids, two or more employers of labor, or two or more members of a labor organization, or the awarding officer or official, or five or more residents of the town or towns where the public works are to be constructed, may appeal to the associate commissioners for a wage determination, or a classification of employment as made by the Commissioner, by serving on the Commissioner a written notice to that effect. Thereupon the Commissioner shall immediately cause the associate commissioners to hold a public hearing on the Commissioner's action appealed from. The associate commissioners shall render their decision not later than three (3) days after the closing of the hearing. The decision of a majority of the associate commissioners shall be final, and notice thereof shall be given forthwith to the awarding official or public body. (Section 27A, Chapter 149, General Laws, Commonwealth of Massachusetts).

E. Payments by employers to health and welfare plans under collective bargaining agreements or understandings between organized labor and employers shall be included for the purpose of establishing minimum wage rates as herein provided, (Section 26, Chapter 149, General Laws, Commonwealth of Massachusetts).

F. The aforesaid rates of wages in the schedule of wage rates shall include payments by employers to health and welfare plans as provided in the previous section, and such payments shall be considered as payments to persons under this section performing work as herein provided. Any employer engaged in the construction of such works who does not make payments to health and welfare plan where such payments are included in said rates of wages shall pay the amount of said payments directly to each employee engaged in said construction. (Section 27, Chapter 149, General Laws, as amended).

G. The Contractor's attention is directed to further minimum wage provisions under **Paragraph 8** of the Supplementary Conditions. In cases of conflict, the higher rate shall apply.

THE COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF LABOR
DIVISION OF OCCUPATIONAL SAFETY

Prevailing Wage Rates

As determined by the Commissioner under the provisions of the Massachusetts General Laws, Chapter 149, Sections 26 to 27H

DEVAL L. PATRICK
Governor
TIMOTHY P. MURRAY
Lt. Governor

GEORGE NOEL
Director
ROBERT J. PREZIOSO
Commissioner

Awarding Authority: M.B.T.A.
Contract Number: A27CN02 **City/Town:** BROOKLINE
Description Of Work: LONGWOOD STA/BROOKLINE VILLAGE ACCESSIBILITY WORKS
Job Location: LONGWOOD STA/BROOKLINE VILLAGE LIGHT RAIL

Classification	Effective Dates and Total Rates							
(2 AXLE) DRIVER - EQUIPMENT	12/1/2006	$38.930	6/1/2007	$39.430	8/1/2007	$39.930	12/1/2007	$40.630
	6/1/2008	$41.130	8/1/2008	$41.630	12/1/2008	$42.330		
(3 AXLE) DRIVER - EQUIPMENT	12/1/2006	$39.000	6/1/2007	$39.500	8/1/2007	$40.000	12/1/2007	$40.700
	6/1/2008	$41.200	8/1/2008	$41.700	12/1/2008	$42.400		
(4 & 5 AXLE) DRIVER - EQUIPMENT	12/1/2006	$39.120	6/1/2007	$39.620	8/1/2007	$40.120	12/1/2007	$40.820
	6/1/2008	$41.320	8/1/2008	$41.820	12/1/2008	$42.520		
ADS/SUBMERSIBLE PILOT	8/1/2006	$89.860	8/1/2007	$98.260				
AIRTRACK OPERATOR	12/1/2006	$41.450	6/1/2007	$42.600	12/1/2007	$43.700	5/31/2008	$44.200
ASBESTOS REMOVER - PIPE / MECH. EQUIPT.	6/1/2006	$32.550						
ASPHALT RAKER	12/1/2006	$40.950	6/1/2007	$42.100	12/1/2007	$43.200	5/31/2008	$43.700
ASPHALT/CONCRETE/CRUSHER PLANT-ON SITE	12/1/2006	$52.240	6/1/2007	$53.240	12/1/2007	$54.640		
BACKHOE/FRONT-END LOADER	12/1/2006	$52.240	6/1/2007	$53.240	12/1/2007	$54.640		
BARCO-TYPE JUMPING TAMPER	12/1/2006	$40.950	6/1/2007	$42.100	12/1/2007	$43.200	5/31/2008	$43.700
BLOCK PAVER, RAMMER / CURB SETTER	12/1/2006	$41.450	6/1/2007	$42.600	12/1/2007	$43.700	5/31/2008	$44.200
BOILERMAKER	10/1/2005	$48.170						
BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING)	2/1/2007	$60.690						
BULLDOZER/GRADER/SCRAPER	12/1/2006	$51.960	6/1/2007	$52.950	12/1/2007	$54.340		
CAISSON & UNDERPINNING BOTTOM MAN	12/1/2006	$41.650	6/1/2007	$42.800	12/1/2007	$43.900	5/31/2008	$44.400
CAISSON & UNDERPINNING LABORER	12/1/2006	$40.700	6/1/2007	$41.850	12/1/2007	$42.950	5/31/2008	$43.450
CAISSON & UNDERPINNING TOP MAN	12/1/2006	$40.700	6/1/2007	$41.850	12/1/2007	$42.950	5/31/2008	$43.450
CARBIDE CORE DRILL OPERATOR	12/1/2006	$40.950	6/1/2007	$42.100	12/1/2007	$43.200	5/31/2008	$43.700
CARPENTER	3/1/2007	$53.570	9/1/2007	$54.720	3/1/2008	$55.870	9/1/2008	$57.020
	3/1/2009	$58.170						
CEMENT MASONRY/PLASTERING	2/1/2007	$59.630	7/1/2007	$59.850	1/1/2008	$60.080	7/1/2008	$60.310
	1/1/2009	$60.530						
CHAIN SAW OPERATOR	12/1/2006	$40.950	6/1/2007	$42.100	12/1/2007	$43.200	5/31/2008	$43.700
CLAM SHELLS/SLURRY BUCKETS/HEADING MACHINES	12/1/2006	$53.240	6/1/2007	$54.240	12/1/2007	$55.640		
COMPRESSOR OPERATOR	12/1/2006	$43.280	6/1/2007	$44.030	12/1/2007	$45.100		
DELEADER (BRIDGE)	1/1/2007	$56.780	7/1/2007	$58.080	1/1/2008	$59.230	7/1/2008	$60.380
	1/1/2009	$61.530	7/1/2009	$62.680	1/1/2010	$63.830		
DEMO: AD/ZEMAN	12/1/2006	$40.700	6/1/2007	$41.850	12/1/2007	$42.950	5/31/2008	$43.450
DEMO: BACKHOE/LOADER/HAMMER OPERATOR	12/1/2006	$41.700	6/1/2007	$42.850	12/1/2007	$43.950	5/31/2008	$44.450
DEMO: BURNERS	12/1/2006	$41.450	6/1/2007	$42.600	12/1/2007	$43.700	5/31/2008	$44.200
DEMO: CONCRETE CUTTER/SAWYER	12/1/2006	$41.700	6/1/2007	$42.850	12/1/2007	$43.950	5/31/2008	$44.450
DEMO: JACKHAMMER OPERATOR	12/1/2006	$41.450	6/1/2007	$42.600	12/1/2007	$43.700	5/31/2008	$44.200
DEMO: WRECKING LABORER	12/1/2006	$40.700	6/1/2007	$41.850	12/1/2007	$42.950	5/31/2008	$43.450
DIRECTIONAL DRILL MACHINE OPERATOR	12/1/2006	$51.960	6/1/2007	$52.950	12/1/2007	$54.340		
DIVER	8/1/2006	$66.130	8/1/2007	$71.730				

This wage schedule must be posted at the work site in accordance with M.G.L. ch. 149, sec. 27

Failure of the employer to pay "prevailing wage rates," which are the minimum wage rates listed above, on public works projects is a violation of M.G.L. ch. 149, sec. 27B. Employees not receiving such rates should report the violation to the Office of Fair Labor and Business Practices, 100 Cambridge Street , Boston, MA 02108; Tel: (617) 727-3465.

Issue Date: 3/9/2007 **Rate Sheet:** BROOKLINE **Job ID:** 109874 **Page:** 1

DEVAL L. PATRICK
Governor
TIMOTHY P. MURRAY
Lt. Governor

THE COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF LABOR
DIVISION OF OCCUPATIONAL SAFETY

Prevailing Wage Rates

As determined by the Commissioner under the provisions of the Massachusetts General Laws, Chapter 149, Sections 26 to 27H

GEORGE NOEL
Director
ROBERT J. PREZIOSO
Commissioner

Awarding Authority: M.B.T.A.
Contract Number: A27CN02 **City/Town:** BROOKLINE
Description Of Work: LONGWOOD STA/BROOKLINE VILLAGE ACCESSIBILITY WORKS
Job Location: LONGWOOD STA/BROOKLINE VILLAGE LIGHT RAIL

Classification	Effective Dates and Total Rates							
DIVER TENDER	8/1/2006	$52.570	8/1/2007	$56.570				
DIVER TENDER (EFFLUENT)	8/1/2006	$69.520	8/1/2007	$75.520				
DIVER/SLURRY (EFFLUENT)	8/1/2006	$89.860	8/1/2007	$98.260				
ELECTRICIAN	3/1/2007	$59.580	9/1/2007	$60.810	3/1/2008	$62.050	9/1/2008	$63.290
	3/1/2009	$64.520	9/1/2009	$65.760	3/1/2010	$67.000	9/1/2010	$68.230
	3/1/2011	$69.470						
ELEVATOR CONSTRUCTOR	1/1/2007	$58.730						
ELEVATOR CONSTRUCTOR HELPER	1/1/2007	$44.990						
FENCE & GUARD RAIL ERECTOR	12/1/2006	$40.950	6/1/2007	$42.100	12/1/2007	$43.200	5/31/2008	$43.700
FIELD ENG. - INST. PERSON (BLDG, SITE, HVY CONST)	11/1/2006	$49.400	5/1/2007	$50.790	11/1/2007	$51.780	5/1/2008	$53.160
FIELD ENG. - ROD PERSON (BLDG, SITE, HVY CONST)	11/1/2006	$37.070	5/1/2007	$37.940	11/1/2007	$38.560	5/1/2008	$39.420
FIELD ENG -CHIEF OF PARTY (BLDG, SITE, HVY CONST)	11/1/2006	$50.700	5/1/2007	$52.100	11/1/2007	$53.100	5/1/2008	$54.500
FIRE ALARM INSTALLER	3/1/2007	$59.580	9/1/2007	$60.810	3/1/2008	$62.050	9/1/2008	$63.290
	3/1/2009	$64.520	9/1/2009	$65.760	3/1/2010	$67.000	9/1/2010	$68.230
	3/1/2011	$69.470						
FIRE ALARM REPAIR / MAINTENANCE	9/1/2006	$46.600	9/1/2007	$47.500				
FIREMAN (ASST. ENGINEER)	12/1/2006	$47.370	6/1/2007	$48.240	12/1/2007	$49.450		
FLAGGER & SIGNALER	12/1/2006	$34.800	6/1/2007	$35.950	12/1/2007	$37.050	5/31/2008	$37.550
FLOORCOVERER	3/1/2007	$53.810	9/1/2007	$54.980	3/1/2008	$56.150	9/1/2008	$57.320
	3/1/2009	$58.490						
FORK LIFT/CHERRY PICKER	12/1/2006	$52.240	6/1/2007	$53.240	12/1/2007	$54.640		
GENERATOR/LIGHTING PLANT/HEATERS	12/1/2006	$43.280	6/1/2007	$44.030	12/1/2007	$45.100		
GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS)	1/1/2007	$52.070	7/1/2007	$53.220	1/1/2008	$54.370	7/1/2008	$55.520
	1/1/2009	$56.670	7/1/2009	$57.820	1/1/2010	$58.970		
HOISTING ENGINEER/CRANES/GRADALLS	12/1/2006	$52.240	6/1/2007	$53.240	12/1/2007	$54.640		
HVAC (DUCTWORK)	2/1/2007	$57.010	8/1/2007	$58.140	2/1/2008	$59.260	8/1/2008	$60.390
	2/1/2009	$61.510	8/1/2009	$62.760	2/1/2010	$64.010		
HVAC (ELECTRICAL CONTROLS)	3/1/2007	$59.580	9/1/2007	$60.810	3/1/2008	$62.050	9/1/2008	$63.290
	3/1/2009	$64.520	9/1/2009	$65.760	3/1/2010	$67.000	9/1/2010	$68.230
	3/1/2011	$69.470						
HVAC (PIPE)	3/1/2007	$60.230	9/1/2007	$61.730	3/1/2008	$62.980	9/1/2008	$64.480
	3/1/2009	$65.730	9/1/2009	$67.230	3/1/2010	$68.480		
HVAC (TESTING AND BALANCING - AIR)	2/1/2007	$57.010	8/1/2007	$58.140	2/1/2008	$59.260	8/1/2008	$60.390
	2/1/2009	$61.510	8/1/2009	$62.760	2/1/2010	$64.010		
HVAC (TESTING AND BALANCING -WATER)	3/1/2007	$60.230	9/1/2007	$61.730	3/1/2008	$62.980	9/1/2008	$64.480
	3/1/2009	$65.730	9/1/2009	$67.230	3/1/2010	$68.480		
HYDRAULIC DRILLS	12/1/2006	$41.450	6/1/2007	$42.600	12/1/2007	$43.700	5/31/2008	$44.200
INSULATOR (PIPES & TANKS)	9/1/2006	$52.620	9/1/2007	$54.660	9/1/2008	$56.860	9/1/2009	$59.260
	9/1/2010	$61.660						

This wage schedule must be posted at the work site in accordance with M.G.L. ch. 149, sec. 27

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Prevailing Wage Rates

As determined by the Commissioner under the provisions of the Massachusetts General Laws, Chapter 149, Sections 26 to 27H

GEORGE NOEL
Director
ROBERT J. PREZIOSO
Commissioner

Awarding Authority: M.B.T.A.
Contract Number: A27CN02 **City/Town:** BROOKLINE
Description Of Work: LONGWOOD STA/BROOKLINE VILLAGE ACCESSIBILITY WORKS
Job Location: LONGWOOD STA/BROOKLINE VILLAGE LIGHT RAIL

Classification	Effective Dates and Total Rates							
IRONWORKER/WELDER	9/16/2006	$51.660	3/16/2007	$53.060				
JACKHAMMER & PAVING BREAKER OPERATOR	12/1/2006	$40.950	6/1/2007	$42.100	12/1/2007	$43.200	5/31/2008	$43.700
LABORER	12/1/2006	$40.700	6/1/2007	$41.850	12/1/2007	$42.950	5/31/2008	$43.450
LABORER: CARPENTER TENDER	12/1/2006	$40.700	6/1/2007	$41.850	12/1/2007	$42.950	5/31/2008	$43.450
LABORER: CEMENT FINISHER TENDER	12/1/2006	$40.700	6/1/2007	$41.850	12/1/2007	$42.950	5/31/2008	$43.450
LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER	12/1/2006	$40.700	6/1/2007	$41.850	12/1/2007	$42.950	5/31/2008	$43.450
LABORER: MASON TENDER	12/1/2006	$40.950	6/1/2007	$42.100	12/1/2007	$43.200	5/31/2008	$43.700
LABORER: MULTI-TRADE TENDER	12/1/2006	$40.700	6/1/2007	$41.850	12/1/2007	$42.950	5/31/2008	$43.450
LABORER: TREE REMOVER	12/1/2006	$40.700	6/1/2007	$41.850	12/1/2007	$42.950	5/31/2008	$43.450
LASER BEAM OPERATOR	12/1/2006	$40.950	6/1/2007	$42.100	12/1/2007	$43.200	5/31/2008	$43.700
MARBLE & TILE FINISHERS	3/1/2007	$51.100						
MARBLE MASONS,TILELAYERS & TERRAZZO MECH	3/1/2007	$60.730						
MECH. SWEEPER OPERATOR (NON-CONSTRUCTION)	7/1/2006	$25.570						
MECH. SWEEPER OPERATOR (ON CONST. SITES)	12/1/2006	$51.960	6/1/2007	$52.950	12/1/2007	$54.340		
MECHANICS MAINTENANCE	12/1/2006	$51.960	6/1/2007	$52.950	12/1/2007	$54.340		
MILLWRIGHT	4/1/2006	$47.550						
MORTAR MIXER	12/1/2006	$40.950	6/1/2007	$42.100	12/1/2007	$43.200	5/31/2008	$43.700
OILER (OTHER THAN TRUCKS,CRANES,GRADALLS)	12/1/2006	$38.100	6/1/2007	$38.720	12/1/2007	$39.590		
OILER (TRUCKS,CRANES,GRADALLS)	12/1/2006	$40.610	6/1/2007	$41.300	12/1/2007	$42.260		
OTHER POWER DRIVEN EQUIPMENT - CLASS II	12/1/2006	$51.960	6/1/2007	$52.950	12/1/2007	$54.340		
PAINTER (BRIDGES/TANKS)	1/1/2007	$56.780	7/1/2007	$58.080	1/1/2008	$59.230	7/1/2008	$60.380
	1/1/2009	$61.530	7/1/2009	$62.680	1/1/2010	$63.830		
PAINTER (SPRAY OR SANDBLAST, NEW) *	1/1/2007	$53.470	7/1/2007	$54.770	1/1/2008	$55.920	7/1/2008	$57.070
	1/1/2009	$58.220	7/1/2009	$59.370	1/1/2010	$60.520		
PAINTER (SPRAY OR SANDBLAST, REPAINT)	1/1/2007	$51.530	7/1/2007	$52.830	1/1/2008	$53.980	7/1/2008	$55.130
	1/1/2009	$56.280	7/1/2009	$57.430	1/1/2010	$58.580		
PAINTER (TRAFFIC MARKINGS)	12/1/2006	$40.700	6/1/2007	$41.850	12/1/2007	$42.950	5/31/2008	$43.450
PAINTER / TAPER (BRUSH, NEW) *	1/1/2007	$52.070	7/1/2007	$53.370	1/1/2008	$54.520	7/1/2008	$55.670
	1/1/2009	$56.820	7/1/2009	$57.970	1/1/2010	$59.120		
PAINTER / TAPER (BRUSH, REPAINT)	1/1/2007	$50.130	7/1/2007	$51.430	1/1/2008	$52.580	7/1/2008	$53.730
	1/1/2009	$54.880	7/1/2009	$56.030	1/1/2010	$57.180		
PANEL & PICKUP TRUCKS DRIVER	12/1/2006	$38.760	6/1/2007	$39.260	8/1/2007	$39.760	12/1/2007	$40.460
	6/1/2008	$40.960	8/1/2008	$41.460	12/1/2008	$42.160		
PIER AND DOCK CONSTRUCTOR (UNDERPINNING AND DECK)	8/1/2006	$52.570	8/1/2007	$56.570				
PILE DRIVER	8/1/2006	$52.570	8/1/2007	$56.570				
PIPEFITTER & STEAMFITTER	3/1/2007	$60.230	9/1/2007	$61.730	3/1/2008	$62.980	9/1/2008	$64.480
	3/1/2009	$65.730	9/1/2009	$67.230	3/1/2010	$68.480		
PIPELAYER	12/1/2006	$40.950	6/1/2007	$42.100	12/1/2007	$43.200	5/31/2008	$43.700

This wage schedule must be posted at the work site in accordance with M.G.L. ch. 149, sec. 27

Failure of the employer to pay "prevailing wage rates," which are the minimum wage rates listed above, on public works projects is a violation of M.G.L. ch. 149, sec. 27B. Employees not receiving such rates should report the violation to the Office of Fair Labor and Business Practices, 100 Cambridge Street , Boston, MA 02108; Tel: (617) 727-3465.

THE COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF LABOR
DIVISION OF OCCUPATIONAL SAFETY

Prevailing Wage Rates

As determined by the Commissioner under the provisions of the Massachusetts General Laws, Chapter 149, Sections 26 to 27H

DEVAL L. PATRICK
Governor
TIMOTHY P. MURRAY
Lt. Governor

GEORGE NOEL
Director
ROBERT J. PREZIOSO
Commissioner

Awarding Authority: M.B.T.A.
Contract Number: A27CN02 **City/Town:** BROOKLINE
Description Of Work: LONGWOOD STA/BROOKLINE VILLAGE ACCESSIBILITY WORKS
Job Location: LONGWOOD STA/BROOKLINE VILLAGE LIGHT RAIL

Classification	Effective Dates and Total Rates							
PLUMBERS & GASFITTERS	3/1/2007	$60.250	9/1/2007	$61.750	3/1/2008	$63.000	9/1/2008	$64.500
	3/1/2009	$65.750	9/1/2009	$67.250	3/1/2010	$68.500		
PNEUMATIC CONTROLS (TEMP.)	3/1/2007	$60.230	9/1/2007	$61.730	3/1/2008	$62.980	9/1/2008	$64.480
	3/1/2009	$65.730	9/1/2009	$67.230	3/1/2010	$68.480		
PNEUMATIC DRILL/TOOL OPERATOR	12/1/2006	$40.950	6/1/2007	$42.100	12/1/2007	$43.200	5/31/2008	$43.700
POWDERMEN & BLASTER	12/1/2006	$41.700	6/1/2007	$42.850	12/1/2007	$43.950	5/31/2008	$44.450
POWER SHOVEL/DERRICK/TRENCHING MACHINE	12/1/2006	$52.240	6/1/2007	$53.240	12/1/2007	$54.640		
PUMP OPERATOR (CONCRETE)	12/1/2006	$52.240	6/1/2007	$53.240	12/1/2007	$54.640		
PUMP OPERATOR (DEWATERING, OTHER)	12/1/2006	$43.280	6/1/2007	$44.030	12/1/2007	$45.100		
READY-MIX CONCRETE DRIVER	5/1/2006	$37.470						
RECLAIMERS	12/1/2006	$51.960	6/1/2007	$52.950	12/1/2007	$54.340		
RESIDENTIAL WOOD FRAME CARPENTER **	3/1/2007	$36.030						
RIDE-ON MOTORIZED BUGGY OPERATOR	12/1/2006	$40.950	6/1/2007	$42.100	12/1/2007	$43.200	5/31/2008	$43.700
ROLLER/SPREADER/MULCHING MACHINE	12/1/2006	$51.960	6/1/2007	$52.950	12/1/2007	$54.340		
ROOFER (Inc.Roofer Waterproofng &Roofer Damproofg)	2/1/2007	$48.860	8/1/2007	$49.960	2/1/2008	$51.390	8/1/2008	$52.460
	2/1/2009	$53.860						
SHEETMETAL WORKER	2/1/2007	$57.010	8/1/2007	$58.140	2/1/2008	$59.260	8/1/2008	$60.390
	2/1/2009	$61.510	8/1/2009	$62.760	2/1/2010	$64.010		
SIGN ERECTOR	6/1/2005	$29.070						
SLATE / TILE / PRECAST CONCRETE ROOFER	2/1/2007	$49.110	8/1/2007	$50.210	2/1/2008	$51.610	8/1/2008	$52.710
	2/1/2009	$54.110						
SPECIALIZED EARTH MOVING EQUIP < 35 TONS	12/1/2006	$39.220	6/1/2007	$39.720	8/1/2007	$40.750	12/1/2007	$40.920
	6/1/2008	$41.420	8/1/2008	$41.920	12/1/2008	$42.620		
SPECIALIZED EARTH MOVING EQUIP > 35 TONS	12/1/2006	$39.510	6/1/2007	$40.010	8/1/2007	$40.510	12/1/2007	$41.210
	6/1/2008	$41.710	8/1/2008	$42.210	12/1/2008	$42.910		
SPRINKLER FITTER	9/16/2006	$59.700	3/16/2007	$60.950	9/16/2007	$62.450	3/16/2008	$63.700
	9/16/2008	$65.200	3/16/2009	$66.450	9/16/2009	$67.950	3/16/2010	$69.200
STEAM BOILER OPERATOR	12/1/2006	$51.960	6/1/2007	$52.950	12/1/2007	$54.340		
TAMPERS, SELF-PROPELLED OR TRACTOR DRAWN	12/1/2006	$51.960	6/1/2007	$52.950	12/1/2007	$54.340		
TELECOMMUNICATION TECHNICIAN	9/1/2006	$46.600	9/1/2007	$47.500				
TERRAZZO FINISHERS	3/1/2007	$59.630						
TEST BORING DRILLER	12/1/2006	$42.100	6/1/2007	$43.250	12/1/2007	$44.350	5/31/2008	$44.850
TEST BORING DRILLER HELPER	12/1/2006	$40.820	6/1/2007	$41.970	12/1/2007	$43.070	5/31/2008	$43.570
TEST BORING LABORER	12/1/2006	$40.700	6/1/2007	$41.850	12/1/2007	$42.950	5/31/2008	$43.450
TRACTORS/PORTABLE STEAM GENERATORS	12/1/2006	$51.960	6/1/2007	$52.950	12/1/2007	$54.340		
TRAILERS FOR EARTH MOVING EQUIPMENT	12/1/2006	$39.800	6/1/2007	$40.300	8/1/2007	$40.800	12/1/2007	$41.500
	6/1/2008	$42.000	8/1/2008	$42.500	12/1/2008	$43.200		
TUNNEL WORK (COMP. AIR HAZ. WASTE)	12/1/2006	$54.380	6/1/2007	$55.780	12/1/2007	$57.530		
TUNNEL WORK (COMPRESSED AIR)	12/1/2006	$52.380	6/1/2007	$53.780	12/1/2007	$55.530		
TUNNEL WORK (FREE AIR HAZ. WASTE)	12/1/2006	$46.450	6/1/2007	$47.850	12/1/2007	$49.600		

This wage schedule must be posted at the work site in accordance with M.G.L. ch. 149, sec. 27

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THE COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF LABOR
DIVISION OF OCCUPATIONAL SAFETY

Prevailing Wage Rates

As determined by the Commissioner under the provisions of the Massachusetts General Laws, Chapter 149, Sections 26 to 27H

DEVAL L. PATRICK
Governor
TIMOTHY P. MURRAY
Lt. Governor

GEORGE NOEL
Director
ROBERT J. PREZIOSO
Commissioner

Awarding Authority: M.B.T.A.
Contract Number: A27CN02 **City/Town:** BROOKLINE
Description Of Work: LONGWOOD STA/BROOKLINE VILLAGE ACCESSIBILITY WORKS
Job Location: LONGWOOD STA/BROOKLINE VILLAGE LIGHT RAIL

Classification	Effective Dates and Total Rates							
TUNNEL WORK (FREE AIR)	12/1/2006	$44.450	6/1/2007	$45.850	12/1/2007	$47.600		
VAC-HAUL	12/1/2006	$39.220	6/1/2007	$39.720	8/1/2007	$40.220	12/1/2007	$40.920
	6/1/2008	$41.420	8/1/2008	$41.920	12/1/2008	$42.620		
WAGON DRILL OPERATOR	12/1/2006	$40.950	6/1/2007	$42.100	12/1/2007	$43.200	5/31/2008	$43.700
WASTE WATER PUMP OPERATOR	12/1/2006	$52.240	6/1/2007	$53.240	12/1/2007	$54.640		
WATER METER INSTALLER	3/1/2007	$60.250	9/1/2007	$61.750	3/1/2008	$63.000	9/1/2008	$64.500
	3/1/2009	$65.750	9/1/2009	$67.250	3/1/2010	$68.500		

* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used.

** The Residential Wood Frame Carpenter classification applies only to the construction of new, wood frame residences that do not exceed four stories including the basement.

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Awarding Authority: M.B.T.A.
Contract Number: A27CN02 **City/Town:** BROOKLINE
Description Of Work: LONGWOOD STA/BROOKLINE VILLAGE ACCESSIBILITY WORKS
Job Location: LONGWOOD STA/BROOKLINE VILLAGE LIGHT RAIL

Classification	Effective Dates and Total Rates					
CABLE TECHNICIAN (Power Zone)	9/3/2006	$28.880	9/2/2007	$30.580	8/31/2008	$32.380
CABLEMAN (Underground Ducts & Cables)	9/3/2006	$37.630	9/2/2007	$39.820	8/31/2008	$42.160
DRIVER / GROUNDMAN -Inexperienced (<2000 Hrs)	9/3/2006	$27.030	9/2/2007	$28.630	8/31/2008	$30.320
DRIVER / GROUNDMAN CDL	9/3/2006	$33.570	9/2/2007	$35.470	8/31/2008	$37.490
EQUIPMENT OPERATOR (Class A CDL)	9/3/2006	$41.630	9/2/2007	$43.820	8/31/2008	$46.160
EQUIPMENT OPERATOR (Class B CDL)	9/3/2006	$35.680	9/2/2007	$37.670	8/31/2008	$39.800
GROUNDMAN	9/3/2006	$26.530	9/2/2007	$28.130	8/31/2008	$29.820
GROUNDMAN -Inexperienced (<2000 Hrs.)	9/3/2006	$22.580	9/2/2007	$23.980	8/31/2008	$25.460
JOURNEYMAN LINEMAN	9/3/2006	$48.170	9/2/2007	$51.160	8/31/2008	$53.830
TELEDATA CABLE SPLICER	3/1/2007	$27.330				
TELEDATA LINEMAN/EQUIPMENT OPERATOR	3/1/2007	$27.330				
TELEDATA WIREMAN/INSTALLER/TECHNICIAN	3/1/2007	$27.330				
TREE TRIMMER	1/29/2006	$16.880				
TREE TRIMMER GROUNDMAN	1/29/2006	$15.120				

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Issue Date: 3/9/2007 **Rate Sheet:** OUTSIDE ELECT-EAST **Job ID:** 109875 **Page:** 1

COMMONWEALTH OF MASSACHUSETTS

Division of Occupational Safety

Minimum wage rates for apprentices employed on public works projects are listed below as a percentage of the pre-determined hourly wage rate established by the Commissioner under the provisions of the M.G.L. c. 149, ss. 26-27D. Apprentice ratios are established by the Division of Apprentice Training pursuant to M.G.L. c. 23, ss. 11E-11L.

All apprentices must be registered with the Division of Apprentice Training in accordance with M.G.L. c. 23, ss. 11E-11L.

City/Town: BROOKLINE — All steps are 6 months (1000 Hours) unless otherwise specified**

Classification	Ratio*	1	2	3	4	5	6	7	8	9	10
ASBESTOS INSULATOR (Pipes & Tanks)	1:4	50	60	70	80						
				Steps are 1 year							
BOILERMAKER	1:5	65	65	70	75	80	85	90	95		
BRICK/PLASTER/CEMENT MASON	1:5	50	60	70	80	90					
CARPENTER	1:5	50	60	70	75	80	80	90	90		
CARPENTER (Residential Wood Frame)	1:5	60	60	65	70	75	80	85	90		
ELECTRICIAN	2:3***	30	35	40	45	50	55	65	70	75	80
				App. Start 2003+:40/40/45/45/50/55/60/65/70/75							
ELEVATOR CONSTRUCTOR	1:1	50	55	65	70	80					
				Steps 1-2 are 6 mos.; Steps 3-5 are 1 year							
FLOORCOVERER	1:1	50	55	60	65	70	75	80	85		
				Steps are 950 hrs.							
GLAZIER	1:1	50	55	60	65	70	75	80	90		
				Steps are 750 hrs.							
HOIST/PORT. ENG.	1:5	55	60	65	70	75	80	85	90		
IRONWORKER		60	70	75	80	85	90				
Structural 1:6; Ornamental 1:4											
LABORER	1:5	60	70	80	90						
MARBLE-TILE-TERRAZZO FINISHER	1:3	50	60	70	80	90					
				Steps are 800 hrs.							
MARBLE-TILE-TERRAZZO MECHANIC	1:3	50	60	70	80	90					
MILLWRIGHT	1:5	50	55	60	65	70	75	80	85		
PAINTER	1:1	50	55	60	65	70	75	80	90		
				Steps are 750 hrs.							
PILE DRIVER	1:3	60	65	70	75	80	85	90	95		

* Ratios are expressed in allowable number of apprentices to journeymen or fraction thereof.
** Multiple ratios are listed in comment field.
*** The job site ratio of 2 apprentices(App) for every 3 journeymen(JM) is allowed as follows: 1 JM: 1 App; 2-3 JM:2 App; 4-6 JM: 4 App; 7- 9 JM: 6 App; 10- 12 JM: 8 App; 13-15 JM: 10 App; etc. Not more than 50% of the apprentices on a job site may have standing as a 1st year apprentice. All other apprentices must have 2nd, 3rd, 4th, or 5th year standing.
**** The job site ratio of 2 apprentices(App) for every 3 journeymen(JM) is allowed as follows: 1-2 JM: 1 App; 3-4 JM: 2 App; 5 JM: 3 App; 6-7 JM: 4 App; 8 JM: 5 App; etc

Issue Date: 3/9/2007 **Rate Sheet:** BROOKLINE **Job ID:** 109874

Designate the existing Paragraph as "A" and add the following new paragraphs:

B. No Board Member, officer or employee of the Authority, officer or employee of any independent authority, political subdivision of the Commonwealth of Massachusetts, officer, employee or elected official or any city, county, or town authority within the Commonwealth of Massachusetts, during his/her tenure and for one (1) year thereafter shall have any interest, direct or indirect, in this contract or the proceeds thereof.

C. No member of or delegate to the Congress of the United States shall be admitted to any share or part of this contract or to any benefit arising therefrom.

6. ARTICLE 6 - PROSECUTION AND PROGRESS

A. Article 6.02 - PROSECUTION OF WORK

This Article is supplemented as follows:

1. Delete paragraph A and substitute the following:

A. The Contractor shall commence Work within fifteen (15) calendar days from the date of the mailing of the executed contract to the Contractor unless otherwise ordered in writing by the Engineer; and he shall complete the specified milestones within the days specified below from the date of the mailing of the executed contract to the Contractor.

In the event the Contractor fails to complete the specified milestones within the days specified, liquidated damages will be assessed pursuant to Section 00700, Article 6.09 of the General Conditions for each calendar day of delay in the completion of the specified milestones as follows:

Milestone	**No. of Calendar Days**	**Liquidated Damages**
1. Completion of Entire Work	**365**	$1,800/day

In no event shall the total amount of liquidated damages for failure to complete the above milestones within the days specified exceed $1,800.00 for any one day.

B. Article 6.05 - CHARACTER OF WORKMEN, METHODS AND EQUIPMENT

This Article is Supplemented as follows:

J. Prior to the Contractor's selection of the job superintendent, a detailed resume must be submitted to the Authority for approval. Included in the job superintendent's requirements are:

1. Commonwealth of Massachusetts Department of Public Safety License for Construction Supervisor without any restrictions.

2. A minimum of 10 years if related construction experience.

The above requirements may only be waived by the Director of Construction.

C. Article 6.08 - DETERMINATION AND EXTENSION OF CONTRACT TIME FOR COMPLETION

A.. This Article is Supplemented as follows:

1. Delete paragraph A. and substitute the following:

The Contractor shall complete, entirely, and in an acceptable manner, the Work required under the Contract within the time stated in the Bid Form, except that the Contract time for completion shall be adjusted as follows:

1. If the Contract is not awarded as contemplated by Section 00100 of the Contract Specifications, then the number of days allowed for the completion of the Work will be computed from the date of receipt of the Contract by the Contractor or the date on which the Contractor was ordered to commence work whichever is later. For the purpose of this paragraph, the Contractor will be presumed to have received the Contract on the day following the mailing of the executed Contract to the Contractor by the Authority. If the Contract specifies a specific calendar date for completion and the Contract is not awarded as contemplated by Section 00100, of the Contract Specifications, then the Contractor will be entitled to an extension of time equivalent to the number of days elapsed from 60 days (45 days if Federal funds are involved) after the opening of bids up to and including the day of receipt of the executed Contract by the Contractor or the date on which the Contractor was ordered to commence Work whichever is later.

D. Article 6.11 - TERMINATION FOR CONVENIENCE

Add new Article 6.11 as follows:

A. If the Engineer determines that it is in the public interest to do so, the Engineer may notify the Contractor to discontinue all work, or any part thereof. Such notice shall be given to the Contractor in writing and thereupon the Contractor shall discontinue such work, or such part thereof, as the Engineer may designate.

B. If the Engineer notifies the Contractor to discontinue all work, or any part thereof, the Engineer shall pay and the Contractor shall accept, as full payment for all work done and materials provided, the following sums:

1. For all completed items of work for which there are unit prices provided in the Contract. The original contract unit prices.

2. For all work on partially completed items.

A sum agreed to by Contractor and Engineer or:

(a) The actual cost for direct labor, materials (less salvage value, if any) and use of equipment plus 10% of this total for overhead; and (b) the actual cost for Worker's Compensation and Employer's Liability Insurance, Health, Welfare and Pension benefits, Social Security deduction, and Employment Security Benefits; and (c) 6 percent of the total of (a) and (b) for profit and; (d) the estimated proportionate cost of surety bonds; and (e) the actual cost to the Contractor for work performed by a Subcontractor plus 10 percent of such cost. No allowance shall be made for general superintendence and the use of small tools and manual equipment.

3. For costs of settlement as:

a. Reasonable and necessary accounting, legal, clerical and other costs of work discontinuance; and reasonable and necessary storage, transportation and other

WEEKLY PAYROLL RECORDS REPORT
& STATEMENT OF COMPLIANCE

In accordance with Massachusetts General Law c. 149, §27B, a true and accurate record must be kept of all persons employed on the public works project for which the enclosed rates have been provided. A Payroll Form has been printed on the reverse of this page and includes all the information required to be kept by law. Every contractor or subcontractor is required to keep these records and preserve them for a period of three years from the date of completion of the contract.

In addition, every contractor and subcontractor is required to submit a copy of their weekly payroll records to the awarding authority. For every week in which an apprentice is employed, a photocopy of the apprentice's identification card must be attached to the payroll report. Once collected, the awarding authority is also required to preserve those records for three years.

In addition, each such contractor, subcontractor, or public body shall furnish to the awarding authority directly, within fifteen days after completion of its portion of the work a statement, executed by the contractor, subcontractor or public body who supervises the payment of wages, in the following form:

STATEMENT OF COMPLIANCE

_____, 200_____

I,_____,_____
(Name of signatory party) (Title)

do hereby state:

That I pay or supervise the payment of the persons employed by

_____ on the _____
(Contractor, subcontractor or public body) (Building or project)

and that all mechanics and apprentices, teamsters, chauffeurs and laborers employed on said project have been paid in accordance with wages determined under the provisions of sections twenty-six and twenty-seven of chapter one hundred and forty nine of the General Laws.

Signature _____

Title _____

A27CN02
2007

SC-13(10)

WEEKLY PAYROLL REPORT FORM

Company Name:

Prime Contractor

Project Name:

Subcontractor
List Prime Contractor:

Awarding Auth.:

Work Week Ending:

Employer Signature:

Print Name & Title:

Employee Name & Address	Work Classification	Hours Worked							(A) Tot. Hrs.	(B) Hourly Base Wage	Employer Contributions			(F) [B+C+D+E] Hourly Total Wage (prev. wage)	(G) [A*F] Weekly Total Amount
											(C) Health & Welfare	(D) Pension	(E) Supp. Unemp		
		S	M	T	W	T	F	S							

NOTE: Every contractor and subcontractor is required to submit a copy of their weekly payroll records to the awarding authority.

PREVAILING WAGE NOTICE
TO PUBLIC AWARDING AUTHORITIES AND CONTRACTORS
September 1, 2006

DRIVERS WHO HAUL BITUMINOUS CONCRETE (ASPHALT)

The Massachusetts Supreme Judicial Court recently affirmed that drivers who haul bituminous concrete to public construction projects are not covered by the Prevailing Wage Law while off-site, including time spent over-the-road and picking-up materials. These drivers are covered by the Prevailing Wage Law only while on-site at the public construction project.

In Teamsters Joint Council No. 10 v. Department of Labor, et al., 447 Mass. 100 (2006), the SJC upheld a 2001 administrative decision limiting the applicability of prevailing wage rates to the time bituminous drivers spend at the public construction site. This most recent decision of the SJC followed a 1989 ruling that had upheld an earlier Department of Labor (and Industries') policy that had deemed this category of drivers to be "teamsters" under the Law and, therefore, entitled to prevailing wage rates. See Construction Industries of Massachusetts v. Commissioner of Labor and Industries, 406 Mass. 162 (1989). However, the earlier court case had left open the question of whether this entitled these bituminous drivers to prevailing wage rates for their over-the-road time as well as their on-site time. This most recent decision has now answered that question.

All of the requirements of the Prevailing Wage Law, including certified weekly payroll requirements, apply to bituminous drivers for all time spent at the public construction site.

DRIVERS WHO HAUL READY-MIX CONCRETE (CEMENT)

Drivers who haul ready-mix concrete to public construction projects are not covered by the Prevailing Wage Law while off-site, including time spent over-the-road and picking-up materials. These drivers are covered by the Prevailing Wage Law while on-site at the public construction project. This applicability determination was established by a 2001 administrative decision of the Department of Labor's Division of Occupational Safety.

All of the requirements of the Prevailing Wage Law, including certified weekly payroll requirements, apply to ready-mix drivers for all time spent at the public construction site.

Please feel free to contact the Division of Occupational Safety at (617) 727-3492 if you have any questions. Questions about enforcement of the Prevailing Wage Law may be directed to the Attorney General's Fair Labor and Business Practices Division at (617) 727-3465

Division of Occupational Safety 399 Washington Street, 5th Floor, Boston, MA 02108

8.

U.S.A. DOT Federal Transit Administration Contract Requirements

U.S.A. DOT Federal Transit Administration Contract Requirements

A.	General
B.	Disadvantaged Business Enterprise
C.	Title VI of the Civil Rights Act of 1964
D.	Energy Conservation
E.	Cargo Preference
F.	Audit and Inspection
G.	Environmental, Resource Conservation, Energy Requirements, Seismic Safety, Clean Water and Recycled Products
H.	Notice of Federal Regulations
I.	Record Retention
J.	ADA
K.	Buy America Certification
L.	Fly America
M.	No Obligation by the Federal Government
N.	Program Fraud and False or Fraudulent Statements and Related Acts
O.	Termination
P.	Remedies/Breach of Contract
Q.	Integrity Certification
R.	Lobbying
S.	Nondiscrimination
T.	Liquidated Damages
U.	Labor Provisions
V.	Interests of Members of Congress
W.	Debarred Bidders
X.	Insurance / Bonding
Y.	Project Signs
Z.	Certified Payroll - Construction Projects
AA.	Minority Business Enterprise
BB.	MBE Obligation
CC.	Minimum Federal Wage Rates
DD.	Equal Employment Opportunity (EEO)

Standard Federal Equal Employment Opportunity
Construction Contract Specification

Appx. No.1 - Notice of Requirement for Affirmative Action to Ensure Equal Employment Opportunity

A. GENERAL

1. These Contract provisions shall apply to all Work performed on the Contract by the Contractor's own organization and with the assistance of workers under the Contractor's immediate superintendence and to all Work performed on the Contract by piecework, station work, or by Subcontract.

2. Except as otherwise provided for in each Section, the Contractor shall insert in each Subcontract all of the stipulations contained in these Required Contract Provisions, and further require their inclusion in any lower tier Subcontract or purchase order that may in turn be made. The Required Contract Provisions shall not be incorporated by reference in any case. The prime Contractor shall be responsible for compliance by any Subcontractor or lower tier Subcontractor with these Required Contract Provisions.

3. A breach of the following clauses of the Required Contract Provisions shall be sufficient grounds for termination of the Contract.

B. DISADVANTAGED BUSINESS ENTERPRISE

THE (CONTRACTOR OR SUBCONTRACTOR AND ITS THIRD PARTY CONTRACTORS) SHALL NOT DISCRIMINATE ON THE BASIS OF RACE, COLOR, NATIONAL ORIGIN, AGE, OR SEX IN THE PERFORMANCE OF THIS (CONTRACT OR AGREEMENT). THE REQUIREMENTS OF 49 C.F.R. PART 23 AND THE AUTHORITY'S U.S. DOT-APPROVED DISADVANTAGED BUSINESS ENTERPRISE (DBE) PROGRAM (WHERE REQUIRED) ARE INCORPORATED IN THIS (CONTRACT AGREEMENT) BY REFERENCE. FAILURE BY THE (CONTRACTOR OR SUBCONTRACTOR AND ITS THIRD PARTY CONTRACTORS) TO CARRY OUT THESE REQUIREMENTS IS A MATERIAL BREACH OF THE (CONTRACT OR AGREEMENT), WHICH MAY RESULT IN THE TERMINATION OF THIS (CONTRACT OR AGREEMENT) OR SUCH OTHER REMEDY AS THE AUTHORITY DEEMS APPROPRIATE.

****(THIRD PARTY CONTRACTING REFERS TO CONTRACTING BY AUTHORITY USING FEDERAL ASSISTANCE).***

C. TITLE VI OF THE CIVIL RIGHTS ACT OF 1964

The Contractor agrees to comply with, and assure the compliance by its subcontractors and third party contractors under this Project, with all requirements of Title VI of the Civil Rights Act of 1964, 42 U.S.C. § 2000d; U.S. DOT regulations, "Nondiscrimination in Federally Assisted Programs of the Department of Transportation -- Effectuation of Title VI of the Civil Rights Act," 49 C.F.R. Part 21.

D. ENERGY CONSERVATION

The Contractor, Subcontractors and its third party contractors shall comply with mandatory standards and policies relating to energy efficiency that are contained in applicable State energy conservation plans issued in compliance with Energy Policy and Conservation Act, U.S.C. §§ 6321 et seq.

E. CARGO PREFERENCE - USE OF UNITED STATES FLAG VESSELS

As required by 46 C.F.R. PART 381, the Contractor agrees --

1. TO UTILIZE PRIVATELY OWNED UNITED STATES-FLAG COMMERCIAL VESSELS TO SHIP AT LEAST 50 PERCENT OF THE GROSS TONNAGE (COMPUTED

SEPARATELY FOR DRY BULK CARRIERS, DRY CARGO LINERS, AND TANKERS) INVOLVED, WHENEVER SHIPPING ANY EQUIPMENT, MATERIALS, OR COMMODITIES PURSUANT TO THIS CONTRACT TO THE EXTENT SUCH VESSELS ARE AVAILABLE AT FAIR AND REASONABLE RATES FOR UNITED STATES-FLAG COMMERCIAL VESSELS.

2. TO FURNISH WITHIN 20 DAYS FOLLOWING THE DATE OF LOADING FOR SHIPMENTS ORIGINATING WITHIN THE UNITED STATES, OR WITHIN 30 WORKING DAYS FOLLOWING THE DATE OF LOADING FOR SHIPMENTS ORIGINATING OUTSIDE THE UNITED STATES, A LEGIBLE COPY OF A RATED, "ON-BOARD" COMMERCIAL OCEAN BILL-OF-LADING IN ENGLISH FOR EACH SHIPMENT OF CARGO DESCRIBED IN PARAGRAPH (1) ABOVE TO THE CONTRACTOR (THROUGH THE PRIME CONTRACTOR IN THE CASE OF SUBCONTRACTOR BILLS-OF-LADING) AND TO THE DIVISION OF NATIONAL CARGO, OFFICE OF MARKET DEVELOPMENT, MARITIME ADMINISTRATION, 400 SEVENTH STREET, S.W., WASHINGTON, D.C. 20590, MARKED WITH APPROPRIATE IDENTIFICATION OF THE PROJECT.

3. TO INSERT THE SUBSTANCE OF THE PROVISIONS OF THIS CLAUSE IN ALL SUBCONTRACTS ISSUED PURSUANT TO THIS CONTRACT.

F. AUDIT AND INSPECTION

Inspection by Federal Officials. The Contractor agrees to permit the Secretary of Transportation (Secretary) and the Comptroller General of the United States, or their authorized representatives, to inspect all Project work, materials, payrolls, and other data, and to audit the books, records, and accounts of the Contractor and its subcontractors pertaining to the Project. The Contractor agrees to require each third party contractor whose contract award is not based on competitive bidding procedures as defined by the Secretary to permit the Secretary of Transportation and the Comptroller General of the United States, or their duly authorized representatives, to inspect all work, materials, payrolls, and other data and records involving that contract, and to audit the books, records, and accounts involving that contract as it affects the Project.

G. ENVIRONMENTAL, RESOURCE CONSERVATION, and ENERGY REQUIREMENTS

The Authority recognizes that many Federal and State statutes imposing environmental, resource conservation, and energy requirements may apply to the Project, Some, but not all, of the major Federal laws that may affect the Project include: the National Environmental Policy Act of 1969, 42 U.S.C. §§ 4321 et seq. the Clean Air Act, as amended, 42 U.S.C. 7401 et seq. and scattered sections of 29 U.S.C.; the Clean Water Act, as amended, scattered sections of 33 U.S.C. and 12 U.S.C.; the Resource Conservation and Recovery Act, as amended, 42 U.S.C. §§ 6901 et seq.; and the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, 42 U.S.C. §§ 9601 et seq. The Authority also recognizes that the Environmental Protection Agency (EPA), the Federal Highway Administration (FHWA) and other agencies of the Federal Government have issued and are expected in the future to issue requirements in the form of regulations, guidelines, standards, orders, or other directives that may affect the Project. Accordingly, the Authority agrees to adhere to, and impose on its contractors and subcontractors, any such Federal requirements, as the Federal Government may now or in the future promulgate. Listed below are requirements of particular concern to FTA. The Authority expressly understands that this list does not constitute the Authority's entire obligation to meet Federal requirements.

1. **Environmental Protection**

The Contractor, Subcontractor and its third party contractors agree to comply with applicable requirements of the National Environmental Policy Act of 1969, as amended, 42 U.S.C. §§ 4321 et seq.; section 14 of the Federal Transit Act, as amended, 49 U. S.C. app. §§ 1610, Council on Environmental Quality regulations, 40 C.F.R. Part 1500 et seq.; and joint FHWA/FTA regulations, "Environmental Impact and Related Procedures," at 23 C.F.R. Part 771 and 49 C.F.R. Part 622.

2. **Air Quality**

The Contractor, Subcontractors and its third party contractors agree to comply with applicable requirements of EPA regulations, "Conformity to State or Federal Implementation Plans of Transportation Plans, Programs, and Projects Developed, Funded or Approved Under Title 21 U.S.C. of the Federal Transit Act," 40 C.F.R. Part 51, Subpart T; and "Determining Conformity of Federal Actions to State or Federal Implementation Plans," 40 C.F.R. Part 93. To support the requisite air quality conformity finding for the Project, the Contractor, Subcontractors and its third party contractors agree to implement each air quality mitigation and control measure incorporated in the Project. The Authority agrees that any Project identified in an applicable State Implementation Plan (SIP) as a Transportation Control Measure, will be wholly consistent with the description of the design concept and scope of the Project set forth in the SIP.

EPA also imposes requirements pertaining to the Clean Air Act, as amended that may apply to transit operators, particularly operators of large transit bus fleets. Thus, the Authority should be aware that the following EPA regulations, among others, may apply to its Project: "Control of Air Pollution from Motor Vehicles and Motor Vehicle Engines, " 40 C.F.R. Part 85; "Control of Air Pollution from New and In-Use Motor Vehicles and New and In-Use-Motor Vehicle Engines: Certification and Test Procedures," 40 C.F.R. Part 86; and "Fuel Economy of Motor Vehicles," 40 C-F.R. Part 600.

3. **Use of Public Lands**

No publicly owned land from a park, recreation area, or wildlife or waterfowl refuge of national, State, or local significance as determined by the Federal, State, or local officials having jurisdiction thereof, or any land from an historic site of national, State, or local significance may be used for the Project unless specific findings required by 49 U.S.C. § 303 are made by U.S. DOT.

4. **Historic Preservation**

The Authority agrees to assist the Federal Government and comply with section 106 of the National Historic Preservation Act, 16 U, S.C. § 470f, involving historic and archaeological preservation by:

a. Consulting the State Historic Preservation Officer on the conduct of investigations, in accordance with Advisory Council on Historic Preservation regulations, "Protection of Historic and Cultural Properties," 36 C.F.R. Part 800, to identify properties and resources listed in or eligible for inclusion in the National Register of Historic Places that may be affected by the Project, and notifying the Federal Government (FTA) of the existence of any such properties; and

b. Complying with all Federal requirements to avoid or mitigate adverse effects upon such properties.

5. **Energy Conservation**

The Contractor, Subcontractors and its third party contractors shall comply with mandatory standards and policies relating to energy efficiency that are contained in applicable State energy conservation plans issued in compliance with the Energy Policy and Conservation Act, 42 U.S.C. §§ 6321 et seq.

6. **Mitigation of Adverse Environmental Effects**

Should the proposed Project cause adverse environmental effects, the Authority agrees to take all reasonable steps to minimize such effects pursuant to 49 U.S.C. app. § 1610, all other applicable statutes, and the procedures set forth in 23 C.F.R. Part 771 and 49 C.F.R. Part 622. The Authority agrees to undertake all environmental mitigation measures that may be identified as commitments in applicable Environmental documents (such as environmental assessments, environmental impact statements, memoranda of agreement, and statements required by 49 U.S.C. § 303) and with any conditions imposed by the Federal Government as part of a finding of no significant impact or a record of decision; all such mitigation measures are incorporated in and made part of this Contract, the December 1993 FTA Grant Agreement with the MBTA (Agreement), by reference. As soon as the Federal Government and the Authority reach agreement on any mitigation measures that have been deferred, those measures will then be incorporated into this Agreement. Such mitigation measures may not be modified or withdrawn without the express written approval of the Federal Government.

7. The Contractor, Subcontractors and its third party contractors with all applicable standards, orders, or requirements issued under section 306 of Clear Air Act (42 U.S.C. 1857(h), section 508 of the Clear Water Act (33 U.S.C. 1368), Executive Order 11738, and Environmental Protection Agency regulations (40 CFR Part 15) (Contracts, Subcontracts, and subgrants of amounts in excess of $100,000).

8. **Seismic Safety**

The contractor agrees that any new building or addition to an existing building will be designed and constructed in accordance with the standards for Seismic Safety required in Department of Transportation Seismic Safety Regulations 49 CFR Part 41 and will certify to compliance to the extent required by the regulation. The contractor also agrees to ensure that all work performed under this contract including work performed by a subcontractor is in compliance with the standards required by the Seismic Safety Regulations and the certification of compliance issued on the project.

9. **Clean Water**

(1) The Contractor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Federal Water Pollution Control Act, as amended, 33 U.S.C. 1251 et seq. The Contractor agrees to report each violation to the Purchaser and understands and agrees that the Purchaser will, in turn, report each violation as required to assure notification to FTA and the appropriate EPA Regional Office.

10. **Recovered Materials**

The contractor agrees to comply with all the requirements of Section 6002 of the Resource Conservation and Recovery Act (RCRA), as amended (42 U.S.C. 6962), including but not

limited to the regulatory provisions of 40 CFR Part 247, and Executive Order 12873, as they apply to the procurement of the items designated in Subpart B of 40 CFR Part 247.

H. NOTICE OF FEDERAL REQUIREMENTS

The Contractor is advised that Federal requirements applicable to this contract as set forth in federal law, regulations, policies, and related administrative practices may change during the performance of this contract. Any such changes shall also apply to this contract.

I. RECORD RETENTION

Retention of all required records for 6 years after the MBTA makes final payment and all other pending matters are closed. **[Refer to Authority's General Conditions Article 5.27].**

J. ADA - Access Requirements for Individuals with Disabilities

The Contractor agrees to comply with, and assure that any subcontractor and third party contractors, under this Project comply with all applicable requirements of the Americans with Disabilities Act Of 1990 (ADA), 42 U.S.C. §§ 12101 et seq.; section 504 of the Rehabilitation Act of 1973, as amended, 29 U.S.C. § 794; section 16 of the Federal Transit Act, as amended, 49 U.S.C. app. §1612; and the following regulations and any amendments thereto:

1. U.S. DOT regulations, "Transportation Services for Individuals with Disabilities (ADA), 49 C.F.R. Part 37;

2. U.S. DOT regulations, "Nondiscrimination on the Basis of Handicap in Programs and Activities Receiving or Benefiting from Federal Financial Assistance," 49 C.F.R. Part 27;

3. U.S. DOT regulations, " Americans With Disabilities (ADA) Accessibility Specifications for Transportation Vehicles, " 49 C.F.R. Part 38;

4. Department of Justice (DOJ) regulations, "Nondiscrimination on the Basis of Disability in State and Local Government Services," 28 C.F.R., Part 35;

5. DOJ regulations, "Nondiscrimination on the Basis of Disability by Public Accommodations and in Commercial Facilities," 28 C.F.R. Part 36.

6. General Services Administration regulations, "Accommodations for the Physically Handicapped," 41 C.F.R. Subpart 101-19;

7. Equal Opportunity Commission, "Regulations to Implement the Equal Employment Provisions of the Americans with Disabilities Act," 29 C.F.R. Part 1630;

8. Federal Communications Commission regulations, "Telecommunications Relay Services and Related Customer Premises Equipment for the Hearing and Speech Disabled," 47 C.F.R. Part 64, Subpart F; and

9. FTA regulations, "Transportation for Elderly and Handicapped Persons," 49 C.F.R. Part 609.

K. BUY AMERICA CERTIFICATION

The contractor agrees to comply with 49 U.S.C. 5323(j) and 49 CFR Part 661, which provide that Federal funds may not be obligated unless steel, iron, and manufactured products used in FTA-funded projects are produced in the United States, unless a waiver has been granted by FTA or the product is subject to a general waiver. General waivers are listed in 49 CFR 661.7, and include microcomputer equipment, software, and small purchases (currently less than $100,000) made with capital, operating, or planning funds.

A bidder or offeror must submit to the FTA Authority the appropriate Buy America certification (below) with all bids on FTA-funded contracts, except those subject to a general waiver. Bids or offers that are not accompanied by a completed Buy America certification must be rejected as non-responsive. This requirement does not apply to lower tier subcontractors. ***[For Certification Forms, refer to Bid Form].***

L. FLY AMERICA

The Contractor agrees to comply with 49 U.S.C. 40118 (the "Fly America" Act) in accordance with the General Services Administration's regulations at 41 CFR Part 301-10, which provide that recipients and subrecipients of Federal funds and their contractors are required to use U.S. Flag air carriers for U.S Government-financed international air travel and transportation of their personal effects or property, to the extent such service is available, unless travel by foreign air carrier is a matter of necessity, as defined by the Fly America Act. The Contractor shall submit, if a foreign air carrier was used, an appropriate certification or memorandum adequately explaining why service by a U.S. flag air carrier was not available or why it was necessary to use a foreign air carrier and shall, in any event, provide a certificate of compliance with the Fly America requirements. The Contractor agrees to include the requirements of this section in all subcontracts that may involve international air transportation.

M. NO OBLIGATION BY THE FEDERAL GOVERNMENT

(1) The Purchaser and Contractor acknowledge and agree that, notwithstanding any concurrence by the Federal Government in or approval of the solicitation or award of the underlying contract, absent the express written consent by the Federal Government, the Federal Government is not a party to this contract and shall not be subject to any obligations or liabilities to the Purchaser, Contractor, or any other party (whether or not a party to that contract) pertaining to any matter resulting from the underlying contract.

(2) The Contractor agrees to include the above clause in each subcontract financed in whole or in part with Federal assistance provided by FTA. It is further agreed that the clause shall not be modified, except to identify the subcontractor who will be subject to its provisions.

N. PROGRAM FRAUD AND FALSE OR FRAUDULENT STATEMENTS AND RELATED ACTS

(1) The Contractor acknowledges that the provisions of the Program Fraud Civil Remedies Act of 1986, as amended, 31 U.S.C. § 3801 et seq . and U.S. DOT regulations, "Program Fraud Civil Remedies," 49 C.F.R. Part 31, apply to its actions pertaining to this Project. Upon execution of the underlying contract, the Contractor certifies or affirms the truthfulness and accuracy of any statement it has made, it makes, it may make, or causes to be made, pertaining to the underlying contract or the FTA assisted project for which this contract work is being performed. In addition to other penalties that may be applicable, the Contractor further acknowledges that if it makes, or causes to be made, a false, fictitious, or fraudulent claim, statement, submission, or certification, the Federal Government reserves the right to impose the penalties of the Program Fraud Civil Remedies Act of 1986 on the Contractor to the extent the Federal Government deems appropriate.

(2) The Contractor also acknowledges that if it makes, or causes to be made, a false, fictitious, or fraudulent claim, statement, submission, or certification to the Federal Government under a contract connected with a project that is financed in whole or in part with Federal assistance originally awarded by FTA under the authority of 49 U.S.C. § 5307, the Government reserves the right to impose the penalties of 18 U.S.C. § 1001 and 49 U.S.C. § 5307(n)(1) on the Contractor, to the extent the Federal Government deems appropriate.

(3) The Contractor agrees to include the above two clauses in each subcontract financed in whole or in part with Federal assistance provided by FTA. It is further agreed that the clauses shall not be modified, except to identify the subcontractor who will be subject to the provisions.

O. TERMINATION

Termination for cause and convenience by the grantee for subgrantee including the manner by which it will be affected and the basis for settlement, (all contracts in excess of $10,000). ***[Refer to Authority's General Conditions and Supplementary Conditions].***

P. REMEDIES / BREACH OF CONTRACT

Administrative, contractual, or legal remedies in instances where contractors violate or breach contract terms, and provide for such sanctions and penalties as may be appropriate. ***[Refer to Authority's General Conditions and Supplementary Conditions].***

Q. INTEGRITY CERTIFICATION

1. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion.

   a. Instructions for Certification - Primary Covered Transactions: (Applicable to all Federal contracts - 49 C.F.R. Part 29).

   1. By signing and submitting this Proposal, the prospective participant is providing the certification set out below.

   2. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of this prospective primary participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction.

   3. The certification in this clause is a material representation of fact upon which reliance was placed when the department or agency determined to enter into this transaction. If it is later determined that the prospective primary participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause of default.

   4. The prospective primary participant shall provide immediate written notice to the department or agency to whom this proposal is submitted if at any time the prospective primary participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

5. The terms "covered transaction," "debarred", "suspended," "ineligible," "lower tier covered," "participant," "person," "primary covered transaction," "principal," "proposal," and "voluntary excluded," as used in this clause, have the meanings set out in this Definitions and Coverage Sections of rules implementing Executive Order 12549. You may contact the department or agency to which this Proposal is submitted for assistance in obtaining a copy of those regulations.

6. The prospective primary participant agrees by submitting this Proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared in eligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this agreement.

7. The Prospective primary participant further agrees by submitting this Proposal that it will include this clause titled "Certification regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transaction, " without modification, in all lower tier covered transactions and in all solicitations for lowered tier covered transactions.

8. A participation in a covered transaction may relay upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the nonprocurement of the "List of Parties Excluded From Federal Procurement of Nonprocurement" (Nonprocurement List) which is compiled by the General Services Administration.

9. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of a participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

10. Except for transactions authorized under paragraph(f) of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.

2. Certification Regarding Debarment, Suspension, Ineligibility, and Voluntary Exclusion - Primary Covered Transactions

a. The prospective primary participant certifies to the best of its knowledge and belief, that it and its principle:

1. Are not presently debarred, suspended, proposed for debarment, declared ineligible or voluntarily excluded from covered transactions by any federal department or agency;

2. Have not within a 3 year period preceding this proposal been convicted of or had a civil judgement rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction of contract under a public transaction; violation of Federal or State antitrust statutes or

commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

3. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (1b) of this certification.

4. Have not within a 3 year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default

b. Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

c. Instructions for Certification - Lower Tier Covered Transactions: (Applicable to all subcontracts, purchase orders and other tier transactions of $25,000 or more -49 C.F.R. 29).

1. By signing and submitting this proposal, the prospective lower tier participant is providing the certification set out below.

2. The certification in this clause in a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

3. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances.

4. The terms "covered transaction," "debarred," "suspended," "ineligible," "primary covered transaction," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, have meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations.

5. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.

6. The prospective lower tier participant further agrees by submitting this proposal that it will include in this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

7. A participation in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the Nonprocurement List.

8. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of a participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

9. Except for transactions authorized under paragraph (e) of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

d. The prospective lower tier participant certifies, by submission of this proposal, that neither it not its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.

e. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

R. LOBBYING CERTIFICATION

Byrd Anti-Lobbying Amendment, 31 U.S.C. 1352, as amended by the Lobbying Disclosure Act of 1995, P.L. 104-65 [to be codified at 2 U.S.C. § 1601, et seq.] - Contractors who apply or bid for an award of $100,000 or more shall file the certification required by 49 CFR part 20, "New Restrictions on Lobbying." Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U.S.C. 1352. Each tier shall also disclose the name of any registrant under the Lobbying Disclosure Act of 1995 who has made lobbying contacts on its behalf with non-Federal funds with respect to that Federal contract, grant or award covered by 31 U.S.C. 1352. Such disclosures are forwarded from tier to tier up to the recipient. ***[Refer to Bid Form]***.

S. NONDISCRIMINATION - Pursuant to Department of Labor regulations at 41 C.F.R. §§ 60-1.4(b)(1) and 60-1.4(c):

1. DURING THE PERFORMANCE OF THIS CONTRACT, THE CONTRACTOR AGREES AS FOLLOWS:

   a. THE CONTRACTOR WILL NOT DISCRIMINATE AGAINST ANY EMPLOYEE OR APPLICANT FOR EMPLOYMENT BECAUSE OF RACE, COLOR, RELIGION, SEX, AGE, DISABILITY, OR NATIONAL ORIGIN. THE CONTRACTOR WILL TAKE AFFIRMATIVE ACTION TO ENSURE THAT APPLICANTS ARE EMPLOYED, AND THAT EMPLOYEES ARE TREATED DURING EMPLOYMENT WITHOUT REGARD TO THEIR RACE, COLOR, RELIGION, SEX, AGE, DISABILITY OR NATIONAL ORIGIN. SUCH ACTION SHALL INCLUDE, BUT NOT BE LIMITED TO THE FOLLOWING: EMPLOYMENT, UPGRADING, DEMOTION, OR TRANSFER; RECRUITMENT OR RECRUITMENT ADVERTISING; LAYOFF OR TERMINATION; RATES OF PAY OR OTHER FORMS OF COMPENSATION; AND SELECTION FOR TRAINING, INCLUDING APPRENTICESHIP. THE CONTRACTOR AGREES CONSPICUOUS PLACES, AVAILABLE TO EMPLOYEES AND APPLICANTS FOR EMPLOYMENT, NOTICES TO BE PROVIDED, SETTING FORTH THE PROVISIONS OF THIS NONDISCRIMINATION CLAUSE.

b. THE CONTRACTOR WILL, IN ALL SOLICITATIONS OR ADVERTISEMENTS FOR EMPLOYEES PLACED BY OR ON BEHALF OF THE CONTRACTOR, STATE THAT ALL QUALIFIED APPLICANTS WILL RECEIVE CONSIDERATION FOR EMPLOYMENT WITHOUT REGARD TO RACE, COLOR, RELIGION, SEX, AGE, DISABILITY, OR NATIONAL ORIGIN.

c. THE CONTRACTOR WILL SEND TO EACH LABOR UNION OR REPRESENTATIVE OF WORKERS WITH WHICH IT HAS A COLLECTIVE BARGAINING AGREEMENT OR OTHER CONTRACT OR UNDERSTANDING, A NOTICE TO BE PROVIDED ADVISING THE LABOR UNION OR WORKERS REPRESENTATIVE OF THE CONTRACTOR'S COMMITMENTS UNDER SECTION 202 OF EXECUTIVE ORDER NO. 11246 OF SEPTEMBER 24, 1965, AND SHALL POST COPIES OF THE NOTICE IN CONSPICUOUS PLACES AVAILABLE TO EMPLOYEES AND APPLICANTS FOR EMPLOYMENT.

d. THE CONTRACTOR WILL COMPLY WITH ALL PROVISIONS OF EXECUTIVE ORDER NO. 11246 OF SEPTEMBER 24, 1965, AND OF THE RULES, REGULATIONS, AND RELEVANT ORDERS OF THE SECRETARY OF LABOR.

e. THE CONTRACTOR WILL FURNISH ALL INFORMATION AND REPORTS REQUIRED BY EXECUTIVE ORDER NO. 11246 OF SEPTEMBER 24,1965, AND BY THE RULES, REGULATIONS, AND ORDERS OF THE SECRETARY OF LABOR, OR PURSUANT THERETO, AND WILL PERMIT ACCESS TO ITS BOOKS, RECORDS AND ACCOUNTS BY THE SECRETARY OF LABOR AND THE FEDERAL TRANSIT ADMINISTRATION (FTA) FOR PURPOSES OF INVESTIGATION TO ASCERTAIN COMPLIANCE WITH SUCH RULES, REGULATIONS, AND ORDERS.

f. IN THE EVENT OF THE CONTRACTOR'S NONCOMPLIANCE WITH THE NONDISCRIMINATION CLAUSES OF THIS AGREEMENT OR WITH ANY OF SUCH RULES, REGULATIONS, OR ORDERS, THIS AGREEMENT MAY BE CANCELED, TERMINATED, OR SUSPENDED IN WHOLE OR IN PART AND THE CONTRACTOR MAY BE DECLARED INELIGIBLE FOR FURTHER FEDERAL OR FEDERALLY ASSISTED CONTRACTS IN ACCORDANCE WITH PROCEDURES AUTHORIZED IN EXECUTIVE ORDER NO. 11246 OF SEPTEMBER 24, 1965, AND SUCH OTHER SANCTIONS MAY BE IMPOSED AND REMEDIES INVOKED AS PROVIDED IN EXECUTIVE ORDER NO. 11246 OF SEPTEMBER 24, 1965, OR BY RULE, REGULATION, OR ORDER OF THE SECRETARY OF LABOR, OR AS OTHERWISE PROVIDED BY LAW.

g. THE CONTRACTOR WILL INCLUDE THE PROVISIONS OF PARAGRAPHS(a) THROUGH (g) OF THIS SUBSECTION IN EVERY SUBCONTRACT OR PURCHASE ORDER UNLESS EXEMPTED BY RULES, REGULATIONS, OR ORDERS OF THE SECRETARY OF LABOR ISSUED PURSUANT TO SECTION 204 OF EXECUTIVE ORDER NO. 11246 OF SEPTEMBER 24,1965, SO THAT SUCH PROVISIONS SHALL BE BINDING UPON EACH SUBCONTRACTOR OR VENDOR. THE CONTRACTOR WILL TAKE SUCH ACTION WITH RESPECT TO ANY SUBCONTRACT OR PURCHASE ORDER AS THE SECRETARY OF LABOR OR FTA MAY DIRECT AS A MEANS OF ENFORCING SUCH PROVISIONS, INCLUDING SANCTIONS FOR NONCOMPLIANCE; PROVIDED, HOWEVER, THAT IF A CONTRACTOR BECOMES INVOLVED IN, OR IS THREATENED WITH, LITIGATION WITH A SUBCONTRACTOR OR VENDOR AS A RESULT OF SUCH DIRECTION, THE CONTRACTOR MAY REQUEST THE UNITED STATES TO ENTER INTO SUCH LITIGATION TO PROTECT THE INTERESTS OF THE UNITED STATES.

T. LIQUIDATED DAMAGES

[Refer to Authority's General Conditions].

U. LABOR PROVISIONS.

1. Labor Provisions - Construction

a. Minimum Wages

(1) All laborers and mechanics employed or working upon the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the project), will be paid unconditionally and not less often than once a week, and without subsequent deduction rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR Part 3), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at the time of payment computed at rates not less than those contained in the Wage Determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the Contractor and such laborers and mechanics. Contributions made or costs reasonably anticipated for bona fide fringe benefits under Section 1 (b) (2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (a) (1) (iv) of 29 CFR Sec. 5.5; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR Sec. 5.5 (a) (4).

Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: provided, that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph (a) (1) (ii) of 29 CFR Sec. 5.5 and the Davis-Bacon Poster (WH-132) shall be posted at all times by the Contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

(2) The Contracting Office shall require that any class of laborers or mechanics which is not listed in the wage determination and which is to be employed under the Contract shall be classified in conformance with the wage determination. The Contracting Office shall approve an additional classification and wage rate and fringe benefits therefor, only when the following criteria have been met:

(a) The work to be performed by the classification requested is not performed by a classification in the wage determination: and

(b) The classification is utilized in the area by the construction industry: and

(c) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(3) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate

(including the amount designated for fringe benefits, where appropriate), a report of the action taken shall be sent by the Contracting Officer to the Administration of the Wage and hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, D.C. 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the Contracting Officer or will notify the Contracting Officer within a 30 day period that additional time is necessary.

(4) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the Contracting Officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the Contracting Officer shall refer the questions including the views of all interested parties and the recommendation of the Contracting Officer, to the Administrator for determination. The administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the Contracting Officer or will notify the Contracting Officer within the 30-day period that additional time is necessary.

(5) The wage rate (including fringe benefits where appropriate) determined pursuant to subparagraph (a) (1) (B) or (C) of 29 CFR Sec. 5.5 shall be paid to all workers performing work in the classification under this Contract from the first day on which work is performed in the classification.

(6) Whenever the minimum wage rate prescribed in the Contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the Contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(7) If the Contractor does not make payments to a trustee or other third person the Contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, provided that the Secretary of Labor has found upon the written request of the Contractor that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the Contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

(8) (A) The contracting officer shall require that any class of laborers or mechanics which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefor only when the following criteria have been met:

(a) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(b) The classification is utilized in the area by the construction industry; and

(c) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(B) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the

action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(C) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination with 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (a)(1)(v) (B) or (C) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

2. **Withholding**

DOT shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from the Contractor under this Contract or any other Federal Contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments of advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees and helpers, employed by the Contractor or any subcontractor the full amount of wages required by the Contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the project), all or part of the wages required by the Contract, the Department of Transportation may, after written notice to the Contractor, sponsor, applicant, or owner, take such any further payment, advance, or guarantee of funds until such violations have ceased.

3. **Payrolls and Basic Records**

a. Payrolls and basic records relating thereto shall be maintained by the Contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work (or under the United States Housing Act of 1937, or under the Housing Act of 1949 in the construction or development of the project). Such records shall contain the name, address, and social security number of each worker, his or her correct classification, hourly rates of wages paid including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof the types described in Section 1 (b) (2) (B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid.

Whenever the Secretary of Labor has found under 29 CFR Sec. 5.5 (a) (1) (iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in Section 1 (b) (2) (b) of the Davis-Bacon Act, the

Contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program has been communicated in writing to the labors or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices and trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

b. The Contractor shall submit weekly for each week in which any Contract work is performed a copy of all payrolls to the Department of Transportation if the Department of Transportation is a party to the Contract, but if the Department of Transportation is not such a party, the Contractor will submit the payrolls to the applicant, sponsor, or owner, as the case may be, for transmission to the Department of Transportation. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under Sec. 5.5 (a) (3) (I) of regulations, 29 CFR Part 5. This information may be submitted in any form desired. Optional form WH-347 is available for this purpose and may be purchased from the Superintendent of Documents (Federal Stock Number 029-005-00014-1), U.S. Government Printing Office, Washington, D.C. 20402. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors.

c. Each payroll submitted shall be accompanied by a "Statement of Compliance", signed by the Contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the Contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be maintained under Sec. 5.5 (a) (3) (I) of regulations, 29 CFR Part 5 and that such information is correct and complete.

(2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the Contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in regulations, 29 CFR Part 3.

(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the Contract.

d. The weekly submission of a properly executed certification set forth on the reverse side of Optional form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph (a) (3) (ii) (b) of 29 CFR Sec. 5.5.

e. The falsification of any of the above certifications may subject the Contractor or subcontractor to civil or criminal prosecution under Section 1001 of Title 18 and Section 231 of Title 31 of the United States Code.

f. The Contractor or subcontractor shall make the records required under paragraph (a) (3) (I) of 29 CFR Sec. 5.5 available for inspection, copying, or transcription by authorized representatives of the Department of Transportation or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the Contractor or subcontractor fails to submit the required records or to make them available, the Federal Agency may, after written notice to the Contractor, sponsor, applicant, or owner, take such

action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR Sec. 5.12.

4. **Apprentices and Trainees - Apprentices**

a. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Bureau of Apprenticeship and Training, or with a State Apprenticeship Agency recognized by the Bureau, or if a person is employed in his or her first 90 days of probationary employment as an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training, or with a State Apprenticeship and Training or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice.

The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the Contractor as to the entire work force under the registered program. Any worker listed on the payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above shall not be paid less than the applicable wage determination for the work actually performed. In addition, any apprentice performing work on the job site in excess of the ration permitted under the registered program shall not be paid less than the applicable wage rate on the wage determination for the work actually performed. Where a Contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the Contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice level of progress, expressed as a percentage of the journeyman's hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits, in accordance with the provisions of the apprentice program. If the apprentice program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringe benefits shall be paid in accordance with that determination. In the event the Bureau of Apprenticeship and Training or a State Apprenticeship Agency recognized by the Bureau, withdraws approval of an Apprenticeship Program, the Contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

b. **Trainees** Except as provided in 29 CFR Sec. 5.16, Trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidence by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman's hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provision of the traine 81 ogram. If the trainees program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman's wage rate on the wage determination which provides for less than

full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the employment and training administration shall not be paid less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ration permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the Contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

c. **Equal Employment Opportunity** The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the Equal Employment Opportunity requirements of Executive Order 11246, as amended and 29 CFR Part 30.

5. **Compliance with Copeland Act Requirements**

The Contractor shall comply with the requirements of the 29 CFR Part 3, which are incorporated by reference.

6. **Subcontracts**

The contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR 5.5(a)(1) through (10) and such other clauses as the Federal Transit Administration may by appropriate instructions require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

7. **Contract Termination: Debarment**

A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. **Compliance with Davis-Bacon and Related Act Requirements**

All rulings and interpretations of the Davis-Bacon and related acts contained in 29 CFR Parts 1,3 and 5 are herein incorporated by reference in this contract.

9. **Disputes Concerning Labor Standards**

Disputes arising out of the Labor Standards Provisions of this Contract shall not be subject to the general disputes clause of the Contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR Parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the Contractor (or any of its subcontractors) and the Contracting Agency, the U.S. Department of Labor, or the employees or their representatives.

10. **Certification of Eligibility**

By entering into this Contract, the Contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the Contractor's firm is a person or firm ineligible to be awarded government contracts by virtue of section 3 (a) of the Davis-Bacon Act or 29 CFR Sec. 5.12 (a) (1).

a. No part of this Contract shall be subcontracted to any person or firm ineligible for award of a government contract by virtue of section 3 (a) of the Davis-Bacon Act or 29 CFR Sec. 5.12(a) (1).

b. The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S. C. Sec. 1001.

11. **Overtime Requirements**

No Contractor or subcontractor contracting for any part of the Contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any work week in which he or she is employed on such work to work in excess of eight hours in any calendar day or in excess of forty hours in such work week unless such laborer or mechanic receives compensation at a rate of pay for all hours worked in excess of eight hours, in any calendar day or in excess of forty hours in such work week, whichever is greater.

12. **Violation: Liability for Unpaid Wages: Liquidated Damages**

In the event of any violation of the clause set forth in subparagraph (b) (1) 29 CFR Sec. 5.5, the Contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such Contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such district or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in subparagraph (b) (1) of 29 CFR Sec. 5.5 in the sum of $10 for each calendar day or which such individual was required or permitted to work in excess of eight hours or in excess of the standard work week of forty hours without payment of the overtime wages required by the clause set forth in subparagraph (b) (1) or 29 CFR Sec. 5.

13. **Withholding for Unpaid Wages and Liquidated Damages**

The Department of Transportation or the recipient shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any monies payable on account of work performed by the Contractor or subcontractor under any such contract or any other federal contract with the same prime contractor, or any other federally assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such Contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in subparagraph (b) (2) of 29 CFR Sec. 5.5.

14. **Nonconstruction Contracts**

In addition to the clauses contained in 29 CFR Sec. 5.5 (b) (10) through (14), in any contract subject only to the Contract Work Hours and Safety Standards Act and not to any of the other statutes cited in 29 CFR Sec. 5.1., the recipient shall insert a clause requiring that the Contractor or subcontractor shall maintain payrolls and basic payroll records during the course of the work and shall preserve them for a period of three years from the completion of the Contract for all laborers and mechanics, including guards and watchmen, working on the Contract. Such records shall contain the names and address of each employee, social security number, correct classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid. Further, the recipient shall require the Contracting officer to insert in any such contract a clause providing that the records to be maintained under this paragraph shall be made available by the Contractor or

subcontractor for inspection, copying, or transcription by authorized representatives of the Department of Transportation and the Department of Labor, and the Contractor or subcontractor will permit such representatives to interview employees during work hours on the job.

15. **Subcontracts**

The Contractor or subcontractor shall insert in any subcontracts the clauses set forth in subparagraph 1 through 12 of this paragraph and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in subparagraph 1 through 14 of this paragraph.

16. **Certified Payroll - Construction Projects (11/7/77)**

The Authority shall obtain from each Contractor and subcontractor a certified copy of each weekly payroll within seven days after the regular payroll date. Following a review by the Authority for compliance with State and Federal Labor Laws, the payroll copy shall be retained at the project site for later review by the Federal Transportation Administration. A Contractor may use the Department of Labor Form WH-347, "Optional Payroll Form", which provides all the necessary payroll information and certifications. This Department of Labor Form may be purchased at nominal cost from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. However, the Contractor may use his own payroll form provided it includes the same information and certifications as the Department of Labor Form WH-348, "Statement of Compliance".

17. **Minority Business Enterprise Policy.** It is the policy of the Department of Transportation that minority business enterprises, as defined in 49 CFR Part 23, shall have the maximum opportunity to participate in the performance of contracts financed in whole or in part with federal funds under this agreement. Consequently, the MBE requirements of 49 CFR Part 23 apply to this agreement.

18. **MBE Obligation.** The Authority and its contractors agree to ensure that minority business enterprises as defined in 49 CFR Part 23 have the maximum opportunity to participate in the performance of contracts and subcontracts financed in whole or in part with federal funds provided under this Agreement. In this regard the Authority and its contractors shall take all necessary and reasonable steps in accordance with 49 CFR Part 23 to ensure that minority business enterprises have the maximum opportunity to compete for and perform contracts. The Authority and its contractors shall not discriminate on the basis of race, color, national origin or sex in the award and performance of DOT assisted contracts.

V. INTERESTS OF MEMBERS OF CONGRESS

Interest of Members of Congress. No Member of or delegate to the Congress of the United States shall be admitted to any share or part of this Project or to any benefit therefrom.

W. DEBARRED BIDDERS - DEBARMENT AND SUSPENSION

The Authority agrees to obtain certifications on debarment and suspension from its third party contractors and subcontractors and otherwise comply with U.S. DOT regulations, "Governmentwide Debarment and Suspension (Nonprocurement) and Governmentwide Requirements for Drug-Free Work place (Grants)," 49 C.F.R. Part 29.

1. Executive Order 12549 provides that, to the extent permitted by law, Executive departments and agencies shall participate in a Governmentwide system for nonprocurement debarment and

suspension. A person who is debarred or suspended shall be excluded from Federal financial and non-financial assistance and benefits under Federal programs and activities. Debarment or suspension of a participant in a program by one agency shall have governmentwide effect.

2. These regulations implement section 3 of Executive Order 12549 and the guidelines promulgated by the Office of Management and Budget under section 6 of the Executive Order by:

   a. Prescribing the programs and activities that are covered by the governmentwide system;

   b. Prescribing the governmentwide criteria and governmentwide minimum due process procedures that each agency shall use;

   c. Providing for the listing of debarred and suspended participants declared ineligible and participants who have voluntarily excluded themselves from participation in covered transactions;

   d. Setting forth the consequences of a debarment, suspension, determination of ineligibility, or voluntary exclusion; and

   e. Offering such guidance as necessary for the effective implementation and administration of the government wide system.

3. Although these regulations cover the listing of ineligible participants and the effect of such listing, they do not prescribe policies and procedures governing declarations of ineligibility.

X. INSURANCE /BONDING - INSURANCE DURING CONSTRUCTION

At a minimum, the Contractor agrees to comply with the insurance requirements normally imposed by its State and local governments. ***[Refer to General Conditions, Supplementary Conditions and Contract Bond Forms]***

Y. PROJECT SIGNS

The Contractor agrees to cause to be erected at the site of construction, and maintained during construction, signs satisfactory to U.S. DOT identifying the Project and indicating that the Government is participating in the development of the Project. ***[Refer to Division 1, General Requirements]***

Z. CERTIFIED PAYROLL - CONSTRUCTION PROJECTS

The Authority shall obtain from each Contractor and subcontractor a certified copy of each weekly payroll within seven days after the regular payroll date. Following a review by the Authority for compliance with State and Federal Labor Laws, the payroll copy shall be retained at the project site for later review by the Federal Transportation Administration. A Contractor may use the Department of Labor Form WH-347, "Optional Payroll form", which provides all the necessary payroll information and certifications. This Department of Labor Form may be purchased at nominal cost from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. However, the Contractor may use his own payroll form provided it includes the same information and certifications as the Department of Labor Form WH-348, "Statement of Compliance".

AA. MINORITY BUSINESS ENTERPRISE

Policy. It is the policy of the Department of Transportation that minority business enterprises, as defined in 49 CFR Part 23, shall have the maximum opportunity to participate in the performance of contracts financed in whole or in part with federal funds under this agreement. Consequently, the MBE requirements of 49 CFR Part 23 apply to this agreement.

BB. MBE OBLIGATION.

The Authority and its contractors agree to ensure that minority business enterprises as defined in 49 CFR Part 23 have the maximum opportunity to participate in the performance of contracts and subcontracts financed in whole or in part with federal funds provided under this Agreement. In this regard the Authority and its contractors shall take all necessary and reasonable steps in accordance with 49 CFR Part 23 to ensure that minority business enterprises have the maximum opportunity to compete for and perform contracts. The Authority and its contractors shall not discriminate on the basis of race, color, national origin or sex in the award and performance of DOT assisted contracts

CC. MINIMUM FEDERAL WAGE RATES

Minimum wages to be paid on this construction project have been established by Wage Predetermination Decisions of the U. S. Secretary of Labor. These wage rates must be prominently posted at the construction site.

1. Wage Determination Decision

   Wage predetermination decisions of the U. S. Secretary of Labor are incorporated herein as follows:

a. MA 070001 with Modification Nos. 1 through 3 for Norfolk County. See pages SC-37(1) through SC-37(22).

General Decision Number: MA070001 03/09/2007 MA1

Superseded General Decision Number: MA20030001

State: Massachusetts

Construction Type: Building

Counties: Barnstable, Bristol, Dukes, Essex, Middlesex, Nantucket, Norfolk and Suffolk Counties in Massachusetts.

BUILDING CONSTRUCTION PROJECTS (does not include single family homes and apartments up to and including 4 stories)

Modification Number	Publication Date
0	02/09/2007
1	02/16/2007
2	03/02/2007
3	03/09/2007

ASBE0006-001 09/01/2006

BARNSTABLE (Except Barnstable, Bourne, Falmouth, Mashpee, Sandwich); BRISTOL (Easton); ESSEX; SUFFOLK; MIDDLESEX; AND NORFOLK (Except Bellingham, Franklin, Plainville, Wrentham) COUNTIES

	Rates	Fringes
Insulator/asbestos worker Includes the application of all insulating materials, protective coverings, coatings, and finishes to all types of mechanical systems	$ 36.07	16.78

ASBE0006-002 12/01/2006

BARNSTABLE (Except Barnstable, Bourne, Falmouth, Mashpee, Sandwich), ESSEX, MIDDLESEX, NORFOLK (Except Bellingham, Franklin, Plainville, Wrentham), AND SUFFOLK COUNTIES

	Rates	Fringes
Hazardous Material Handler		

(Includes preparation, wetting, stripping, removal, scrapping, vacuuming, bagging and disposing of all insulation materials from mechanical systems whether they contain asbestos or not)....$ 20.80 12.80

ASBE0031-005 09/01/2003

BARNSTABLE (Townships of Barnstable, Bourne, Falmouth, Mashpee and Sandwich), BRISTOL (Except Easton) & NORFOLK (Bellingham, Franklin, Plainville & Wrentham) DUKES & NANTUCKET COUNTIES

	Rates	Fringes
Insulator/asbestos worker (Includes the application of all insulating materials, protective coverings, coatings, and finishes to all tyes of mechanical systems).....	$ 27.42	12.81

ASBE0201-001 07/01/2005

BARNSTABLE (Barnstable, Bourne, Falmouth, Mashpee, Sandwich); BRISTOL (Except Easton); DUKES, NANTUCKET, NORFOLK (Townships of Bellingham, Franklin, Plainville and Wrentham); PLYMOUTH (Townships of Lakeville, Mattapoisett, Middleboro, Rocherster and Wareham)

	Rates	Fringes
Hazardous Material Handler (Includes preparation, wetting, stripping, removal, scrapping, vacuuming, bagging and disposing of all insulation materials from mechanical systems, whether they contain asbestos or not)....	$ 17.65	9.95

BOIL0029-001 10/01/2006

	Rates	Fringes
BOILERMAKER.....	$ 32.19	34%+8.96

BRMA0001-008 09/01/2006

FOXBORO CHAPTER
BRISTOL (Attleboro, Berkley, Dighton, Mansfield, North Attleboro, Norton, Raynham, Rehoboth, Seekonk, Taunton) AND NORFOLK (Bellingham, Canton, Dedham, Foxboro, Franklin, Norfolk, Norwood, Plainville, Sharon, Walpole, Westrwood, Wrentham) COUNTIES

	Rates	Fringes
Bricklayer, Cement Mason, Plasterer	$ 38.89	20.52

BRMA0001-009 09/01/2006

LOWELL CHAPTER
MIDDLESEX (Acton, Asby, Ayer, Bedford, Billerica, Boxboro, Carlisle, Chemsford, Dracut, Dunstble, Ft. Denvens, Groton, Littleton, Lowell, North Acton, Pepperell, Shirley, South Acton, Tewksbury, Townsend, Tyngsboro, West Acton, Westford, Wilmington)

	Rates	Fringes
Bricklayer and plasterer	$ 38.89	20.52

BRMA0001-010 09/01/2006

LOWELL CHAPTER
MIDDLESEX (Ashland, Framingham, Holliston, Hopkinton, Hudson, Maynard, Natick, Sherbvorn, Stow); and NORFOLK (Medfield, Medway,Millis)

	Rates	Fringes
Bricklayer	$ 38.89	20.52

BRMA0003-001 03/01/2007

	Rates	Fringes
Marble & Tile Finisher	$ 31.28	19.82
Marble, Tile & Terrazzo Workers	$ 40.33	20.57
Terrazzo Finisher	$ 39.23	20.40

BRMA0003-003 02/01/2007

BOSTON CHAPTER
MIDDLESEX (Arlington, Cambridge, Everett, Malden, Medford, Melrose, Somerville); NORFOLK (Brookline, Milton); and SUFFOLK

	Rates	Fringes
Bricklayer	$ 40.29	20.84

BRMA0003-006 02/01/2007

LYNN CHAPTER
ESSEX (Amesbury, Andover, Beverly, Boxford, Danvers, Essex, Georgetown, Gloucester, Groveland, Hamilton, Haverhill, Ipsewich, Lawrence, Lynn, Lynnfield, Manchester, Marblehead, Merrimac, Methuen, Middleton, Nahant, Newbury, Newburyport, North Andover, Peabody, Rockport, Rowley, Salisbury, Salem, Saugus, Swampscott, Topsfield Wakefield, Wenham, West Newbury); and MIDDLESEX (Reading, North Reading, Wakefield)

	Rates	Fringes
Bricklayer, cement mason and plasterer	$ 40.29	20.84

BRMA0003-007 02/01/2007

WALTHAM CHAPTER
MIDDLESEX (Belmont, Burlington, Concord, Lexington, Lincoln, Stoneham, Sudbury, Waltham, Watertown, Wayland, Weston, Winchester, Woburn)

	Rates	Fringes
Bricklayer and plasterer	$ 40.29	20.84

BRMA0003-008 02/01/2007

NEWTON CHAPTER
MIDDLESEX (Newton) and NORFOLK (Dover, Needham, Wellesley)

	Rates	Fringes
Bricklayer, cement mason and		

plasterer.....$ 40.29 20.84

BRMA0003-009 02/01/2007

NEW BEDFORD
BARNSTABLE; BRISTOL (Acushnet, Darmouth, Farhaven, Fall River, Freetown, New Bedford, Somerset, Swansea, Westport); DUKES; and NANTUCKET COUNTIES

	Rates	Fringes
Bricklayer, cement mason and plasterer	$ 40.29	20.84

BRMA0003-010 08/01/2006

QUINCY CHAPTER
NORFOLK COUNTY (Avon, Braintree, Cohasset, Holbrook, Quincy, Randolph, Soughton, Weymouth)

	Rates	Fringes
Bricklayer, cement mason and plasterer	$ 39.54	19.94

CARP0026-001 09/01/2006

BRISTOL (Attleborough, North Attleborough); ESSEX; MIDDLESEX (Except Belmont, Cambridge, Everett, Malden, Medford, Somerville); AND NORFOLK (Bellingham, Canton, Foxboro, Franklin, Medfield, Medway, Millis, Needham, Norfolk, Norwood, Plainville, Sharon, Walpole, Wellesley, Westwood, Wrentham)

	Rates	Fringes
Carpenter	$ 27.83	19.29

CARP0033-001 09/01/2006

MIDDLESEX (Belmont, Cambridge, Everett, Malden, Medford, Somerville); NORFOLK (Brookline, Dedham, Milton); and SUFFOLK

	Rates	Fringes
Carpenter	$ 33.28	19.49

CARP0056-011 08/01/2006

SUFFOLK (All of County); and those areas of BARNSTABLE, BRISTOL, ESSEX, MIDDLESEX & NORFOLK COUNTIES situated inside Boston Beltway (I-495) and North of Cape Cod Canal

	Rates	Fringes
Piledriverman	$ 32.38	20.71

CARP0056-012 08/01/2006

All of DUKES and NANTUCKET COUNTIES; and those areas of BARNSTABLE, BRISTOL, and NORFOLK COUNTIES situated OUTSIDE Boston Beltway (I-495) and South of Cape Cod Canal

	Rates	Fringes
Piledriverman	$ 32.38	20.71

CARP0056-013 08/01/2006

Those areas of ESSEX and MIDDLESEX COUNTIES situated OUTSIDE Boston Beltway (I-495)

	Rates	Fringes
Piledriverman	$ 32.38	20.71

CARP0424-003 09/01/2006

NORFOLK COUNTY (Braintree, Cohassett, Scituate, Weymouth, Quincy)

	Rates	Fringes
Carpenter	$ 27.83	19.29

CARP0624-005 09/01/2006

BARNSTABLE; BRISTOL (Except Attleboro & North Attleboro); DUKES; NANTUCKET; AND NORFOLK (Avon, Holbrook, Randolph, Stoughton) COUNTIES

	Rates	Fringes

Carpenter.....$ 27.83 19.29

CARP1121-001 10/01/2004

	Rates	Fringes
Millwright	$ 27.93	17.37

CARP2168-001 09/01/2006

MIDDLESEX (Belmont, Cambridge, Everett, Malden, Medford, Somerville); NORFOLK (Brookline, Dedham, Milton); and SUFFOLK

	Rates	Fringes
Soft Floor Layer	$ 33.62	19.24

CARP2168-004 09/01/2006

BRISTOL; ESSEX; MIDDLESEX (Except Belmont, Cambridge, Everett, Malden, Medford, Somerville); Remainder of Norfolk County

	Rates	Fringes
Soft Floor Layer	$ 33.62	19.24

CARP2168-005 09/01/2006

BARNSTABALE; DUKES; AND NANTUCKET

	Rates	Fringes
Soft Floor Layer	$ 33.62	19.24

ELEC0096-001 06/01/2006

MIDDLESEX (Ashby, Ashland, Ayer, Ft. Devens, Groton, Hopkinton, Hudson, Marlboro, Pepperell, Shirley, Stow, Townsend)

	Rates	Fringes
Electrician	$ 28.65	16.60
Teledata System Installer	$ 22.35	12.81

ELEC0099-001 06/01/2004

BRISTOL (Attleboro, North Attleboro, Seekonk)

	Rates	Fringes
Electrician	$ 30.47	42%
Teledata System Installer	$ 18.85	4.44+17%

ELEC0103-001 09/01/2006

ESSEX; MIDDLESEX (Excluding Ashby, Ashland, Ayer, Ft. Devens, Groton, Hopkinton, Hudson, Marlboro, Pepperell, Shirley, Stow, Townsend); NORFOLK (Excluding Avon, Holbrook, Plainville, Randolph, Stoughton) SUFFOLK

	Rates	Fringes
Teledata System Installer	$ 28.93	18.09

ELEC0103-002 09/01/2006

ESSEX (Amesbury, Andover, Boxford, Georgetown, Groveland, Haverhill, Lawrence, Merrimac, Methuen, Newbury, Newburyport, North Andover, Rowley, Salisbury, West Newbury); MIDDLESEX (Bedford, Billerica, Boxboro, Burlington, Carlisle, Chelmsford, Dracut, Dunstable littleton, Lowell, North Reading, Tewksbury, Tyngsboro, Westford, Wilmington)

	Rates	Fringes
Electrician	$ 38.57	20.53

ELEC0103-004 09/01/2006

ESSEX (Beverly, Danvers, Essex, Gloucester, Hamilton, Ipswich, Manchester, Marblehead, Middleton, Peabody, Rockport, Salem, Topsfield, Wenham)

	Rates	Fringes
Electrician	$ 38.57	20.53

ELEC0103-005 09/01/2006

ESSEX (Lynn, Lynnfield, Nahant, Saugus, Swampscott); MIDDLESEX (Acton, Arlington, Belmont, Cambridge, Concord, Everett, Framingham, Holliston, Lexington, Lincoln, Malden, Maynard, Medford, Melrose, Natick, Newton, Reading, Sherborn,

Somerville, Stoneham, Sudbury, Wakefield, Waltham, Watertown, Wayland, Weston, Winchester, Woburn); NORFOLK (Bellingham, Braintree, Brookline, Canton, Cohasset, Dedham, Dover, Foxboro, Frankloin, Medfield, Medway, Millis, Milton, Needham, Norfolk, Norwood, Quincy, Sharon, Walpole, Wellesley, Westwood, Weymouth, Wrentham); PLYMOUTH (Hingham and Hull);SUFFOLK

	Rates	Fringes
Electrician	$ 38.57	20.53

ELEC0104-001 09/03/2006

	Rates	Fringes
Line Construction:		
Cableman	$ 30.51	7.64+A
Equipment Operator	$ 30.51	11.64+A
Groundman	$ 19.74	7.64+A
Lineman	$ 35.89	12.64+A

A. PAID HOLIDAYS: New Year's Day; Memorial Day; Independence Day; Labor Day; Thanksgiving Day; Christmas Day and Columbus Day, provided the employee has been employed 5 working days prior to any one of the listed holidays.

ELEC0223-005 09/01/2006

BARNSTABLE; BRISTOL (Except Attleboro, North Attleboro, Seekonk); DUKES; NANTUCKET AND NORFOLK (Avon, Halbrook, Plainville, Randolph, Stoughton)

	Rates	Fringes
Electrician	$ 32.67	14.87

ELEC0223-006 09/01/2006

BARNSTABLE; BRISTOL (Except Attleboro, North Attleboro, Seekonk); DUKES; NANTUCKET AND NORFOLK (Avon, Halbrook, Plainville, Randolph, Stoughton)

	Rates	Fringes
Teledata System Installer	$ 25.50	11.86

ELEV0004-001 01/01/2006

	Rates	Fringes
Elevator Mechanic	$ 42.895	13.265+a

FOOTNOTE FOR ELEVATOR MECHANICS:

A. Employer Contributes 8% of basic hourly rate for 5 years or more of service and 6% for 6 months to 5 years of service as vacation pay.

Eight paid holidays (provided employee has worked 5 consecutive days before and the working day after the holiday): New Year's Day, Memorial Day, Independence Day, Labor Day, Veteran's Day, Thanksgiving Day, the Friday after Thanksgiving Day and Christmas Day.

ENGI0004-001 12/01/2006

	Rates	Fringes
Power equipment operators:		
Group 1	$ 35.11	17.63+A
Group 2	$ 34.83	17.63+A
Group 3	$ 26.15	17.63+A
Group 4	$ 30.24	17.63+A
Group 5	$ 20.97	17.63+A
Group 6	$ 23.48	17.63+A

FOOTNOTE FOR POWER EQUIPMENT OPERATORS:

A. PAID HOLIDAYS: New Year's Day, Washington's Birthday, Labor Day, Memorial Day, Independence Day, Patriot's Day, Columbus Day, Veteran's Day, Thanksgiving Day, Christmas Day

HOURLY PREMIUM FOR BOOM LENGTHS (Including Jib):

Over 150 ft.	+1.79
Over 185 ft.	+3.14
Over 210 ft.	+4.42
Over 250 ft.	+6.70
Over 295 ft.	+9.28
Over 350 ft.	+10.80

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

Group 1: Crane; shovel; truck crane; cherry picker; dragline; trench hoe; backhoe; three drum machine; derrick; pile driver; elevator tower; hoist; gradall; shovel dozer; front end loader; fork lift; suger; boring machine; rotaryu

drill; post hole hammer; post hole digger; pumpcrete machine; asphalt plant (on site); concrete batching and/or mixing plant (on site); crusher plant (on site); paving concrete mixer; timber jack

Group 2: Sonic or vibratory hammer; grader; scraper; tandem scraper; concrete pump; bulldozer; tractor; york rake; mulching machine; portable steam boiler; portable steam generator; roller; spreader; tamper (self propelled or tractor drawn); asphalt paver; mechanic - maintenance; paving screed machine; stationary steam boiler; paving concrete finishing machine; cal truck; ballast regulator; switch tamper; rail anchor machine; tire truck

Group 3: Pumps (1-3 grouped); compressor; welding machine (1-3 grouped); generator; concrete vibrator; heater (power driven 1- 5); well point system (operating); syphon-pulsometer; concrete mixer; valves controlling permanent plant air or steam; conveyor; Jackson type tamper; single diaphragm pump; lighting plant

Group 4: Assistant engineer (fireman)

Group 5: Oiler (other than truck cranes and gradalls)

Group 6: Oiler (on truck cranes and gradalls) stant engineer (on truck crane and gradall)

IRON0007-006 09/16/2006

	Rates	Fringes
Ironworkers:		
BRISTOL (Easton); ESSEX (Beverly Gloucester, Lynn,Lynnfield, Manchester, Marblehead Nahant, Salem, Saugus, Swampscott); MIDDLESEX (Arlington, Bedford, Belmont, Burlington, Cambridge, Concord, Everett, Framingham, Lexington, Lincoln, Malden, Maynard, Medford, Melrose, Natick, Newton, Reading, Sherborn, Somerville, Stoneham, Sudbury, Wakefield, Waltham, Watertown,		

Wayland, Weston,
Winchester, Woburn);
NORFOLK (Except Medway);
SUFFOLK.....$ 31.96 20.33
ESSEX (Amesbury, Andover,
Boxford, Danvers, Essex,
Gerogetown, Hamilton,
Haverhill, Ipswich,
Lawrence, Merrimac,
Methuen, Newbury,
Newburyport, North
Andover, Rockport, Rowley,
Salisbury, Topsfield,
Wenham, West Newbury);
MIDDLESEX (Action,
Billericia, Carlisle,
Chelmsford, Dracut,
Dunstable, Groton,
Groveland, Littleton,
Lowell, Middleton, North
Reading, Pepperell,
Tewksbury, Tyngsboro,
Westford, Wilminton).....$ 27.55 20.33

IRON0037-005 01/01/2007

BARNSTABLE; BRISTOL (Acushnet, Attleboro, Berkley, Dartmouth, Dighton, Fairhaven, Fall River, Freetown, Mansfield, New Bedford, North Attleboro, Norton, Raynham, Rehoboth, Seekonk, Somerset, Swansea, Taunton, Westport); DUKES; NANTUCKET; NORFOLK (Billingham, Franklin, Plainville, Wrentham)

	Rates	Fringes
Ironworker	$ 28.65	16.64

IRON0057-001 11/01/2004

MIDDLESEX (Ashby, Ashland, Ayer, Boxboro, Holliston, Hopkinton, Hudson, Marlboro, Shirley, Stow, Townsend); NORFOLK (Medway)

	Rates	Fringes
Ironworker	$ 30.87	16.43

LABO0014-001 12/01/2006

	Rates	Fringes

Plasterer tender		
BARNSTABLE, BRISTOL, DUKES, ESSEX, NANTUCKET, MIDDLESEX (with the exception of Arlington, Belmont, Burlington, Cambridge, Everett, Malden, Medford, Melrose, Reading, Somerville, Stoneham, Wakefield, Winchester, Winthrop and Woburn); NORFOLK (with the exception of Brookline Dedham and Milton) COUNTIES.	$ 23.50	14.25
SUFFOLK COUNTY (Boston, Chelsea, Revere, Winthrop, Deer Island, Nut Island); MIDDLESEX COUNTY (Arlington, Belmont, Burlington, Cambridge, Everett, Malden, Medford, Melrose, Reading, Somerville, Stoneham, Wakefield, Winchester, Winthrop and Woburn only); NORFOLK COUNTY (Brookline, Dedham, and Milton only)....	$ 25.10	16.00

LABO0022-009 12/01/2006

SUFFOLK COUNTY (Boston, Chelsea, Revere, Winthrop, Deer & Nut Islands); MIDDLESEX COUNTY (Arlington, Belmont, Burlington, Cambridge, Everett, Malden, Medford, Melrose, Reading, Somerville, Stoneham, Wakefield, Winchester, Winthrop, and Woburn only); NORFOLK COUNTY (Brookline, Dedham, and Milton only)

	Rates	Fringes
Laborers:		
Group 1	$ 25.10	16.00
Group 2	$ 25.35	16.00
Group 3	$ 25.85	16.00
Group 4	$ 26.10	16.00
Group 5	$ 25.85	16.00
Group 6	$ 27.35	16.00
Group 7	$ 19.20	16.00

LABORERS CLASSIFICATIONS

GROUP 1: Laborers; Carpenter Tenders

GROUP 2: Jackhammer operator; pavement breaker; asphalt raker carbide core drilling machine; chain saw operator; pipelayer; barco type jumping tampers; laser beam; concrete pump; mason tender; motorized mortar mixer; ride-on motorized buggy; fence and beam rail erector

GROUP 3: Air track, block paver; rammer; curb setter, hydraulic and similar self-powered drills

GROUP 4: Blaster; powderman

GROUP 5: Pre-cast floor and roof plank erector

GROUP 6: Asbestos removal laborers/haz-mat laborers

GROUP 7: Flaggers

LABO0022-010 12/01/2006

Counties of BARNSTABLE; BRISTOL; DUKES; ESSEX; NANTUCKET; MIDDLESEX (with the exception of Arlington, Belmont, Burlington, Cambridge, Everett, Malden, Medford, Melrose, Reading, Somerville, Stoneham, Wakfield, Winchester, Winthrop and Woburn); NORFOLK (with the exception of Brookline, Dedham and Milton)

	Rates	Fringes
Laborers:		
Group 1	$ 23.50	14.25
Group 2	$ 23.75	14.25
Group 3	$ 24.25	14.25
Group 4	$ 24.50	14.25
Group 5	$ 24.25	14.25
Group 6	$ 25.50	14.25

LABORERS CLASSIFICATIONS

GROUP 1: Laborers; Carpenter Tenders

GROUP 2: Jackhammer operator; pavement breaker; asphalt raker carbide core drilling machine; chain saw operator; pipelayer; barco type jumping tampers; laser beam; concrete pump; mason tender; motorized mortar mixer; ride-on motorized buggy; fence and beam rail erector

GROUP 3: Air track, block paver; hammer; curb setter, hydraulic and similar self-powered drills

GROUP 4: Blaster; powderman

GROUP 5: Pre-cast floor and roof plank erector

GROUP 6: Asbestos removal laborers/haz-mat laborers

LABO1421-004 12/01/2006

BARNSTABLE, BRISTOL, DUKES, ESSEX, MIDDLESEX, NANTUCKET NORFOLK
AND SUFFOLK COUNTIES

	Rates	Fringes
Laborers:		
WRECKING LABORERS:		
Adzeman	$ 25.10	16.00
Asbestos, Toxic, Hazardous Waste	$ 25.10	16.00
Burners, Jackhammers	$ 25.80	16.00
Small Backhoes, Loaders on Tracks, Bobcat Type Loaders, and Hydraulic "Brock" Type Hammer Operators, Concrete Cutting Saws, Journeyman, Concrete Sawyer	$ 26.10	16.00
Wrecking Laborer	$ 25.10	16.00
Yardman Laborer (Salvage Yard Only)	$ 21.10	16.00
Yardman, Burners Sawyers	$ 24.20	16.00

PAIN0011-007 06/01/2006

BARNSTABLE, BRISTOL, DUKES, AND NANTUCKET COUNTIES

	Rates	Fringes
Glazier	$ 29.38	12.25+A

FOOTNOTE:
A. PAID HOLIDAY: LABOR DAY (provided employee has worked any part of the week prior to Labor Day and any part of the week after Labor Day)

PAIN0035-004 07/01/2006

BARNSTABLE; BRISTOL; ESSEX; NANTUCKET; DUKES; COUNTIES;
REMAINDER OF NORFOLK; MIDDLESEX AND SUFFOLK COUNTIES

	Rates	Fringes
Painters:		
NEW CONSTRUCTION:		
Brush, Taper	$ 28.16	17.74
Spray, Sandblast	$ 29.56	17.74
REPAINT:		
Brush, Taper	$ 26.22	17.74
Spray, Sandblast	$ 27.62	17.74

PAIN0035-013 07/01/2006

MIDDLESEX (Cambridge, Everett, Malden, Medford, Somerville)
SUFFOLK COUNTY (Boston, Chelsea) NORFOLK COUNTY (Brookline)

	Rates	Fringes
Painters:		
NEW CONSTRUCTION:		
Brush, Taper	$ 33.95	17.74
Spray, Sandblast	$ 35.35	17.74
REPAINT:		
Brush, Taper	$ 32.01	17.74
Spray, Sandblast	$ 33.41	17.74

PAIN0035-020 07/01/2006

ESSEX; MIDDLESEX; NORFOLK; SUFFOLK

	Rates	Fringes
Glazier	$ 28.16	17.74

PLAS0534-001 01/01/2007

ESSEX; MIDDLESEX; NORFOLK AND SUFFOLK COUNTY

	Rates	Fringes
Cement Mason	$ 33.31	23.70

PLAS0534-004 01/01/2007

MIDDLESEX; NORFOLK AND SUFFOLK COUNTIES

	Rates	Fringes
Plasterer	$ 33.31	23.70

PLUM0004-001 03/01/2006

MIDDLESEX (Ashby, Ayer-West of Greenville branch of Boston and Maine Railroad, Ft. Devens, Groton, Shirley, Townsend)

	Rates	Fringes
Plumbers and Pipefitters	$ 32.54	16.73

PLUM0012-005 09/01/2006

ESSEX (Lynn, Lynnfield, Nahant, Saugus, Swampscott); MIDDLESEX (Acton, Arlington, Ashland, Ayer - except W. of Greenville Branch of Boston & Maine RR, Bedford, Belmont, Billerica, Boxboro, Burlington, Cambridge, Carlisle, Chelmsford, Concord, Dracut, Dunstable, Everett, Framingham, Hudson, Holliston, Hopkinton, Lexington, Lincoln, Littleton, Lowell, Malden, Marlboro, Maynard, Medford, Melrose, Natick, Newton, North Reading, Pepperell, Reading, Sherborn, Somerville, Stoneham, Stow, Sudbury, Tewksbury, Tyngsboro, Wakefield, Waltham, Watertown, Wayland, Westford, Wilmington, Winchester, Woburn); NORFOLK (Bellingham, Braintree, Brokline, Canton, Cohasset, Dedham, Dover,Foxboro, Franklin, Medfield, Medway, Millis, Milton, Needham, Norfolk, Norwood, Plainville, Quincy, Sharon, Walpole, Wellesley, Westwood, Weymouth, Wrentham); AND SUFFOLK COUNTIES

	Rates	Fringes
Plumber	$ 40.22	19.23

PLUM0051-004 09/01/2006

BARNSTABLE; BRISTOL; DUKES; NANTUCKET; AND NORFOLK (Avon, Holbrook, Randolph, Stoughton) COUNTIES

	Rates	Fringes
Plumbers and Pipefitters	$ 32.41	18.71

PLUM0138-001 09/01/2006

ESSEX (Ames, Andover, Beverly, Boxford, Byfield, Danvers, Essex, Georgetown, Gloucester, Groveland, Hamilton, Haverhill, Ipswich, Lawrence, Manchester, Marblehead, Merrimac, Methuen, Middleton, Newbury, Newburyport, North Andover, Peabody, Rockport, Rowley, Salem, Salisbury, Topsfield, Wenham, West Newbury)

	Rates	Fringes
Plumber, Pipefitter, Steamfitter	$ 33.92	19.19

PLUM0537-005 09/01/2006

MIDDLESEX (Arlington, Cambridge, Everett, Lincoln, Malden, Medford, Melrose, Reading, Wakefield, Winchester and Woburn), NORFOLK (Bellingham, Braintree, Brookline, Canton, Cashasset, (Bellingham, Braintree, Brookline, Canton Cashasset, Dedham, Foxboro, Franklin, Millis, Milton, Sharon, Walpole, Westwood, and Wrenthan) ESSEX (Lynn, Lynnfield, Nahant, Saugus, Swanpscott) SUFFOLK (Boston and Chelsea)

	Rates	Fringes
Pipefitter	$ 42.46	16.69

ROOF0033-001 02/01/2007

	Rates	Fringes
Roofers:		
All Tear-off and/or removal of any types of roofing and all spudding, sweeping, vacuuming and/or cleanup of any and all areas of any type where a roof is to be relaid	$ 31.46	17.97

SFMA0550-001 01/01/2007

BRISTOL (Portion within 35 mile radius from Boston City Hall; ESSEX; MIDDLESEX (Except Ashby, Townsend, and portions of Pepperell and Shirley beyond 35 mile radius from Boston City Hall); NORFOLK; PLYMOUTH (Portion within 35 mile radius of Boston City Hall); SUFFOLK

	Rates	Fringes
Sprinkler Fitter	$ 44.70	15.76

SFMA0669-001 04/01/2006

BARNSTABLE; BRISTOL (Beyond 35 mile radius of Boston City Hall); DUKES; MIDDLESEX (Ashby, Townsend, portions of Pepperell and Shirley beyond 35 mile radius of Boston City Hall); NANTUCKET; PLYMOUTH (Beyond 35 mile radius of Boston City Hall)

	Rates	Fringes
Sprinkler Fitter	$ 31.68	13.40

SFMA0676-001 01/01/2006

BRISTOL (Seekonk, Swansea, and Somerset)

	Rates	Fringes
Sprinkler Fitter	$ 33.95	16.45

* SHEE0017-003 02/01/2007

BRISTOL (Attleboro, Berkley, Easton, Mansfield, North Attleboro, Norton, Raynham, Taunton); ESSEX; MIDDLESEX; NORFOLK; PLYMOUTH (except except Marion, Mattapoisett, Rochester, Wareham); SUFFOLK

	Rates	Fringes
Sheet metal worker	$ 35.98	24.94

* SHEE0017-007 02/01/2007

BARNSTABLE; BRISTOL (Acushnet, Assonet, Dartmouth, Dighton, Fairhaven, Fall River, Freetown, New Bedford, Rehoboth, Seeekonk, Somerset, Swansea, Westport); DUKES; AND NANTUCKET

	Rates	Fringes
Sheet metal worker	$ 27.94	20.30

TEAM0379-001 06/01/2005

	Rates	Fringes
Truck drivers:		
Group 1	$ 26.63	10.16+A+B
Group 2	$ 26.80	10.16+A+B
Group 3	$ 26.87	10.16+A+B
Group 4	$ 26.99	10.16+A+B
Group 5	$ 27.09	10.16+A+B
Group 6	$ 27.38	10.16+A+B
Group 7	$ 27.67	10.16+A+B

POWER TRUCKS $.25 DIFFERENTIAL BY AXLE
TUNNEL WORK (UNDERGROUND ONLY) $.40 DIFFERENTIAL BY AXLE
HAZARDOUS MATERIALS (IN HOT ZONE ONLY) $2.00 PREMIUM

TRUCK DRIVERS CLASSIFICATIONS

Group 1: Station wagons; panel trucks; and pickup trucks

Group 2: Two axle equipment; & forklift operator

Group 3: Three axle equipment and tireman

Group 4: Four and Five Axle equipment

Group 5: Specialized earth moving equipment under 35 tons other than conventional type trucks; low bed; vachual; mechanics, paving restoration equipment

Group 6: Specialized earth moving equipment over 35 tons

Group 7: Trailers for earth moving equipment (double hookup)

FOOTNOTES:

A. PAID HOLIDAYS: New Year's Day, Washington's Birthday, Memorial Day, Independence Day, Labor Day, Patriot's Day, Columbus Day, Veteran's Day, Thanksgiving Day and Christmas Day

B. PAID VACATION: Employees with 4 months to 1 year of service receive 1/2 day's pay per month; 1 week vacation for 1 - 5 years of service; 2 weeks vacation for 5 - 10 years of service; and 3 weeks vacation for more than 10 years of service

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WELDERS - Receive rate prescribed for craft performing

operation to which welding is incidental.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

In the listing above, the "SU" designation means that rates listed under the identifier do not reflect collectively bargained wage and fringe benefit rates. Other designations indicate unions whose rates have been determined to be prevailing.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request

review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION

DD. EQUAL EMPLOYMENT OPPORTUNITY (EEO)

STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY CONSTRUCTION CONTRACT SPECIFICATIONS (EXECUTIVE ORDER NO. 11246):

1. AS USED IN THESE SPECIFICATIONS:

   a. "COVERED AREA" MEANS THE GEOGRAPHICAL AREA DESCRIBED IN THE SOLICITATION FROM WHICH THIS CONTRACT RESULTED;

   b. "DIRECTOR" MEANS DIRECTOR, OFFICE OF FEDERAL CONTRACT COMPLIANCE PROGRAMS, UNITED STATES DEPARTMENT OF LABOR, OR ANY PERSON TO WHOM THE DIRECTOR DELEGATES AUTHORITY;

   c. "EMPLOYER IDENTIFICATION NUMBER" MEANS THE FEDERAL SOCIAL SECURITY NUMBER USED ON THE EMPLOYER'S QUARTERLY FEDERAL TAX RETURN, U.S. TREASURY DEPARTMENT FORM 941;

   d. "MINORITY" INCLUDES:

      (i) BLACK (ALL PERSONS HAVING ORIGINS IN ANY OF THE BLACK AFRICAN RACIAL GROUPS NOT OF HISPANIC ORIGIN);

      (ii) HISPANIC (ALL PERSONS OF MEXICAN, PUERTO RICAN, CUBAN, CENTRAL OR SOUTH AMERICAN, OR OTHER SPANISH CULTURE OR ORIGIN, REGARDLESS OF RACE);

      (iii) ASIAN AND PACIFIC ISLANDER (ALL PERSONS HAVING ORIGINS IN ANY OF THE ORIGINAL PEOPLES OF THE FAR EAST, SOUTHEAST ASIA, THE INDIAN SUBCONTINENT, OR THE PACIFIC ISLANDS); AND

      (iv) AMERICAN INDIAN OR ALASKAN NATIVE (ALL PERSONS HAVING ORIGINS IN ANY OF THE ORIGINAL PEOPLES OF NORTH AMERICA AND MAINTAINING IDENTIFIABLE TRIBAL AFFILIATIONS THROUGH MEMBERSHIP AND PARTICIPATION OR COMMUNITY IDENTIFICATION).

2. WHENEVER THE CONTRACTOR, OR SUBCONTRACTOR AT ANY TIER, SUBCONTRACTS A PORTION OF THE WORK INVOLVING ANY CONSTRUCTION TRADE, IT SHALL PHYSICALLY INCLUDE IN EACH SUBCONTRACT IN EXCESS OF $10,000 THE PROVISIONS OF THESE SPECIFICATIONS AND THE NOTICE WHICH CONTAINS THE APPLICABLE GOALS FOR MINORITY AND FEMALE PARTICIPATION AND WHICH IS SET FORTH IN THE SOLICITATIONS FROM WHICH THIS CONTRACT RESULTED.

3. IF THE CONTRACTOR IS PARTICIPATING (PURSUANT TO 41 C.F.R. § 60-4.5) IN A HOMETOWN PLAN APPROVED BY THE U. S. DEPARTMENT OF LABOR IN THE COVERED AREA, EITHER

INDIVIDUALLY OR THROUGH AN ASSOCIATION, ITS AFFIRMATIVE ACTION OBLIGATIONS ON ALL WORK IN THE PLAN AREA (INCLUDING GOALS AND TIMETABLES) SHALL BE IN ACCORDANCE WITH THAT PLAN FOR THOSE TRADES WHICH HAVE UNIONS PARTICIPATING IN THE PLAN. CONTRACTORS MUST BE ABLE TO DEMONSTRATE THEIR PARTICIPATION IN AND COMPLIANCE WITH THE PROVISIONS OF ANY SUCH HOMETOWN PLAN. EACH CONTRACTOR OR SUBCONTRACTOR PARTICIPATING IN AN APPROVED PLAN IS INDIVIDUALLY REQUIRED TO COMPLY WITH ITS OBLIGATIONS UNDER THE EEO CLAUSE, AND TO MAKE A GOOD FAITH EFFORT TO ACHIEVE EACH GOAL UNDER THE PLAN IN EACH TRADE IN WHICH IT HAS EMPLOYEES. THE OVERALL GOOD FAITH PERFORMANCE BY OTHER CONTRACTORS OR SUBCONTRACTORS TOWARD A GOAL IN AN APPROVED PLAN DOES NOT EXCUSE ANY COVERED CONTRACTOR'S OR SUBCONTRACTOR'S FAILURE TO MAKE GOOD FAITH EFFORTS TO ACHIEVE THE PLAN GOALS AND TIMETABLES.

4. THE CONTRACTOR SHALL IMPLEMENT THE SPECIFIC AFFIRMATIVE ACTION STANDARDS PROVIDED IN PARAGRAPHS (7)(a) THROUGH (p) OF THESE SPECIFICATIONS. THE GOALS SET FORTH IN THE SOLICITATION FROM WHICH THIS CONTRACT RESULTED ARE EXPRESSED AS PERCENTAGES OF THE TOTAL HOURS OF EMPLOYMENT AND TRAINING OF MINORITY AND FEMALE UTILIZATION THE CONTRACTOR SHOULD REASONABLY BE ABLE TO ACHIEVE IN EACH CONSTRUCTION TRADE IN WHICH IT HAS EMPLOYEES IN THE COVERED AREA. COVERED CONSTRUCTION CONTRACTORS PERFORMING CONSTRUCTION WORK IN GEOGRAPHICAL AREAS WHERE THEY DO NOT HAVE A FEDERAL OR FEDERALLY ASSISTED CONSTRUCTION CONTRACT SHALL APPLY THE MINORITY AND FEMALE GOALS ESTABLISHED FOR THE GEOGRAPHICAL AREA WHERE THE WORK IS BEING PERFORMED. GOALS ARE PUBLISHED PERIODICALLY IN THE FEDERAL REGISTER IN NOTICE FORM, AND SUCH NOTICES MAY BE OBTAINED FROM ANY OFFICE OF FEDERAL CONTRACT COMPLIANCE PROGRAMS OFFICE OR FROM FEDERAL PROCUREMENT CONTRACTING OFFICERS. THE CONTRACTOR IS EXPECTED TO MAKE SUBSTANTIALLY UNIFORM PROGRESS TOWARD ITS GOAL IN EACH CRAFT DURING THE PERIOD SPECIFIED.

5. NEITHER THE PROVISIONS OF ANY COLLECTIVE BARGAINING AGREEMENT, NOR THE FAILURE BY A UNION WITH WHOM THE CONTRACTOR HAS A COLLECTIVE BARGAINING AGREEMENT TO REFER EITHER MINORITIES OR WOMEN SHALL EXCUSE THE CONTRACTOR'S OBLIGATIONS UNDER THESE SPECIFICATIONS, EXECUTIVE ORDER NO. 11246, OR THE REGULATIONS PROMULGATED PURSUANT THERETO.

6. IN ORDER FOR THE NONWORKING TRAINING HOURS OF APPRENTICES AND TRAINEES TO BE COUNTED IN MEETING THE GOALS, SUCH APPRENTICES AND TRAINEES MUST BE EMPLOYED BY THE CONTRACTOR DURING THE TRAINING PERIOD, AND THE CONTRACTOR MUST HAVE MADE A COMMITMENT TO EMPLOY THE APPRENTICES AND TRAINEES AT THE COMPLETION OF THEIR TRAINING, SUBJECT TO THE AVAILABILITY OF EMPLOYMENT OPPORTUNITIES. TRAINEES MUST BE TRAINED PURSUANT TO TRAINING PROGRAMS APPROVED BY THE U.S. DEPARTMENT OF LABOR.

7. THE CONTRACTOR SHALL TAKE SPECIFIC AFFIRMATIVE ACTIONS TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY. THE EVALUATION OF THE CONTRACTOR'S COMPLIANCE WITH THESE SPECIFICATIONS SHALL BE BASED UPON ITS EFFORT TO ACHIEVE MAXIMUM RESULTS FROM ITS ACTIONS. THE CONTRACTOR SHALL DOCUMENT THESE EFFORTS FULLY, AND SHALL IMPLEMENT AFFIRMATIVE ACTION STEPS AT LEAST AS EXTENSIVE AS THE FOLLOWING:

   a. ENSURE AND MAINTAIN A WORKING ENVIRONMENT FREE OF HARASSMENT, INTIMIDATION, AND COERCION AT ALL SITES, AND IN ALL FACILITIES AT WHICH THE

CONTRACTOR'S EMPLOYEES ARE ASSIGNED TO WORK. THE CONTRACTOR, WHERE POSSIBLE, WILL ASSIGN TWO OR MORE WOMEN TO EACH CONSTRUCTION PROJECT. THE CONTRACTOR SHALL SPECIFICALLY ENSURE THAT ALL FOREMEN, SUPERINTENDENTS, AND OTHER ON-SITE SUPERVISORY PERSONNEL ARE AWARE OF AND CARRY OUT THE CONTRACTOR'S OBLIGATION TO MAINTAIN SUCH A WORKING ENVIRONMENT, WITH SPECIFIC ATTENTION TO MINORITY OR FEMALE INDIVIDUALS WORKING AT SUCH SITES OR IN SUCH FACILITIES.

b. ESTABLISH AND MAINTAIN A CURRENT LIST OF MINORITY AND FEMALE RECRUITMENT SOURCES, PROVIDE WRITTEN NOTICE TO MINORITY AND FEMALE RECRUITMENT SOURCES AND TO COMMUNITY ORGANIZATIONS WHEN THE CONTRACTOR OR ITS UNIONS HAVE EMPLOYMENT OPPORTUNITIES AVAILABLE, AND MAINTAIN A RECORD OF THE ORGANIZATIONS' RESPONSES.

c. MAINTAIN A CURRENT FILE OF THE NAMES, ADDRESSES, AND TELEPHONE NUMBERS OF EACH MINORITY AND FEMALE OFF-THE-STREET APPLICANT AND MINORITY OR FEMALE REFERRAL FROM A UNION, A RECRUITMENT SOURCE OR COMMUNITY ORGANIZATION AND OF WHAT ACTION WAS TAKEN WITH RESPECT TO EACH SUCH INDIVIDUAL. IF SUCH INDIVIDUAL WAS SENT TO THE UNION HIRING HALL FOR REFERRAL AND WAS NOT REFERRED BACK TO THE CONTRACTOR BY THE UNION OR, IF REFERRED, NOT EMPLOYED BY THE CONTRACTOR, THIS SHALL BE DOCUMENTED IN THE FILE WITH THE REASON THEREFOR, ALONG WITH WHATEVER ADDITIONAL ACTIONS THE CONTRACTOR MAY HAVE TAKEN.

d. PROVIDE IMMEDIATE WRITTEN NOTIFICATION TO THE DIRECTOR WHEN THE UNION OR UNIONS WITH WHICH THE CONTRACTOR HAS A COLLECTIVE BARGAINING AGREEMENT HAS NOT REFERRED TO THE CONTRACTOR A MINORITY PERSON OR WOMAN SENT BY THE CONTRACTOR, OR WHEN THE CONTRACTOR HAS OTHER INFORMATION THAT THE UNION REFERRAL PROCESS HAS IMPEDED THE CONTRACTOR'S EFFORT'S TO MEET ITS OBLIGATIONS.

e. DEVELOP ON-THE-JOB OPPORTUNITIES AND/OR PARTICIPATE IN TRAINING PROGRAMS FOR THE AREA WHICH EXPRESSLY INCLUDE MINORITIES AND WOMEN, INCLUDING UPGRADING PROGRAMS AND APPRENTICESHIP AND TRAINEE PROGRAMS RELEVANT TO THE CONTRACTOR'S EMPLOYMENT NEEDS, ESPECIALLY THOSE PROGRAMS FUNDED OR APPROVED BY THE DEPARTMENT OF LABOR. THE CONTRACTOR SHALL PROVIDE NOTICE OF THESE PROGRAMS TO THE SOURCES COMPILED UNDER (7)(b) ABOVE.

f. DISSEMINATE THE CONTRACTOR'S EEO POLICY BY PROVIDING NOTICE OF THE POLICY TO UNIONS AND TRAINING PROGRAMS AND REQUESTING THEIR COOPERATION IN ASSISTING THE CONTRACTOR IN MEETING ITS EEO OBLIGATIONS; BY INCLUDING IT IN ANY POLICY MANUAL AND COLLECTIVE BARGAINING AGREEMENT; BY PUBLICIZING IT IN THE COMPANY NEWSPAPER, ANNUAL REPORT, ETC.; BY SPECIFIC REVIEW OF THE POLICY WITH ALL MANAGEMENT PERSONNEL AND WITH ALL MINORITY AND FEMALE EMPLOYEES AT LEAST ONCE A YEAR; AND BY POSTING THE COMPANY EEO POLICY ON BULLETIN BOARDS ACCESSIBLE TO ALL EMPLOYEES AT EACH LOCATION WHERE CONSTRUCTION WORK IS PERFORMED.

g. REVIEW, AT LEAST ANNUALLY, THE COMPANY'S EEO POLICY AND AFFIRMATIVE ACTION OBLIGATIONS UNDER THESE SPECIFICATIONS WITH ALL EMPLOYEES HAVING RESPONSIBILITY FOR HIRING, ASSIGNMENT, LAYOFF, TERMINATION OR OTHER EMPLOYMENT DECISIONS INCLUDING SPECIFIC REVIEW OF THESE ITEMS WITH ON-SITE SUPERVISORY PERSONNEL SUCH AS SUPERINTENDENTS, GENERAL FOREMAN,

ETC., PRIOR TO THE INITIATION OF CONSTRUCTION WORK AT ANY JOB SITE. A WRITTEN RECORD SHALL BE MADE AND MAINTAINED IDENTIFYING THE TIME AND PLACE OF THESE MEETINGS, PERSONS ATTENDING, SUBJECT MATTER DISCUSSED, AND DISPOSITION OF THE SUBJECT MATTER.

h. DISSEMINATE THE CONTRACTOR'S EEO POLICY EXTERNALLY BY INCLUDING IT IN ANY ADVERTISING IN THE NEWS MEDIA, SPECIFICALLY INCLUDING MINORITY AND FEMALE NEWS MEDIA, AND PROVIDING WRITTEN NOTIFICATION TO AND DISCUSSING THE CONTRACTOR'S EEO POLICY WITH OTHER CONTRACTORS AND SUBCONTRACTORS WITH WHOM THE CONTRACTOR DOES OR ANTICIPATES DOING BUSINESS.

i. DIRECT RECRUITMENT EFFORTS, BOTH ORAL AND WRITTEN, TO MINORITY, FEMALE, AND COMMUNITY ORGANIZATIONS, TO SCHOOLS WITH MINORITY AND FEMALE STUDENTS AND TO MINORITY AND FEMALE RECRUITMENT AND TRAINING ORGANIZATIONS SERVING THE CONTRACTOR'S RECRUITMENT AREA AND EMPLOYMENT NEEDS. NOT LATER THAN ONE MONTH PRIOR TO THE DATE FOR THE ACCEPTANCE OF APPLICATIONS FOR APPRENTICESHIP OR OTHER TRAINING BY ANY RECRUITMENT SOURCE, THE CONTRACTOR SHALL SEND WRITTEN NOTICE TO ORGANIZATIONS SUCH AS THE ABOVE, DESCRIBING THE OPENINGS, SCREENING PROCEDURES, AND TESTS TO BE USED IN THE SELECTION PROCESS.

j. ENCOURAGE PRESENT MINORITY AND FEMALE EMPLOYEES TO RECRUIT OTHER MINORITY PERSONS AND WOMEN AND, WHERE REASONABLE, PROVIDE AFTER SCHOOL, SUMMER AND VACATION EMPLOYMENT TO MINORITY AND FEMALE YOUTH BOTH ON THE SITE AND IN OTHER AREAS OF THE CONTRACTOR'S WORK FORCE.

k. VALIDATE ALL TESTS AND OTHER SELECTION REQUIREMENTS WHERE THERE IS AN OBLIGATION TO DO SO UNDER 41 C.F.R. PART 60-3.

l. CONDUCT, AT LEAST ANNUALLY, AN INVENTORY AND EVALUATION AT LEAST OF ALL MINORITY AND FEMALE PERSONNEL FOR PROMOTIONAL OPPORTUNITIES AND ENCOURAGE THESE EMPLOYEES TO SEEK OR PREPARE FOR, THROUGH APPROPRIATE TRAINING, ETC., SUCH OPPORTUNITIES.

m. ENSURE THAT SENIORITY PRACTICES, JOB CLASSIFICATIONS, WORK ASSIGNMENTS, AND OTHER PERSONNEL PRACTICES DO NOT HAVE A DISCRIMINATORY EFFECT BY CONTINUALLY MONITORING ALL PERSONNEL AND EMPLOYMENT RELATED ACTIVITIES TO ENSURE THAT THE EEO POLICY AND THE CONTRACTOR'S OBLIGATIONS UNDER THESE SPECIFICATIONS ARE BEING CARRIED OUT.

n. ENSURE THAT ALL FACILITIES AND COMPANY ACTIVITIES ARE NONSEGREGATED EXCEPT THAT SEPARATE OR SINGLE-USER TOILET AND NECESSARY CHANGING FACILITIES SHALL BE PROVIDED TO ASSURE PRIVACY BETWEEN SEXES.

o. DOCUMENT AND MAINTAIN A RECORD OF ALL SOLICITATIONS OF OFFERS FOR SUBCONTRACTS FROM MINORITY AND FEMALE CONSTRUCTION CONTRACTORS AND SUPPLIERS, INCLUDING CIRCULATION OF SOLICITATIONS TO MINORITY AND FEMALE CONTRACTOR ASSOCIATIONS AND OTHER BUSINESS ASSOCIATIONS.

p. CONDUCT A REVIEW, AT LEAST ANNUALLY, OF ALL SUPERVISORS' ADHERENCE TO AND PERFORMANCE UNDER THE CONTRACTOR'S EEO POLICIES AND AFFIRMATIVE ACTION OBLIGATIONS.

8. CONTRACTORS ARE ENCOURAGED TO PARTICIPATE IN VOLUNTARY ASSOCIATIONS THAT ASSIST IN FULFILLING ONE OR MORE OF THEIR AFFIRMATIVE ACTION OBLIGATIONS SET FORTH IN PARAGRAPHS (7)(a) THROUGH (p). THE EFFORTS OF A CONTRACTOR ASSOCIATION, JOINT CONTRACTOR-UNION, CONTRACTOR-COMMUNITY, OR OTHER SIMILAR GROUP OF WHICH THE CONTRACTOR IS A MEMBER AND PARTICIPANT, MAY BE ASSERTED AS FULFILLING ANY ONE OR MORE OF ITS OBLIGATIONS UNDER PARAGRAPHS (7)(a) THROUGH (p) OF THESE SPECIFICATIONS, PROVIDED THAT THE CONTRACTOR ACTIVELY PARTICIPATES IN THE GROUP, MAKES EVERY EFFORT TO ASSURE THAT THE GROUP HAS A POSITIVE IMPACT ON THE EMPLOYMENT OF MINORITIES AND WOMEN IN THE INDUSTRY, ENSURES THAT THE CONCRETE BENEFITS OF THE PROGRAM ARE REFLECTED IN THE CONTRACTOR'S MINORITY AND FEMALE WORK FORCE PARTICIPATION, MAKES A GOOD FAITH EFFORT TO MEET ITS INDIVIDUAL GOALS AND TIMETABLES, AND CAN PROVIDE ACCESS TO DOCUMENTATION THAT DEMONSTRATES THE EFFECTIVENESS OF ACTIONS TAKEN ON BEHALF OF THE CONTRACTOR. THE OBLIGATION TO COMPLY, HOWEVER, IS THE CONTRACTOR'S AND FAILURE OF SUCH A GROUP TO FULFILL AN OBLIGATION SHALL NOT BE A DEFENSE FOR THE CONTRACTOR'S NONCOMPLIANCE.

9. A SINGLE GOAL FOR MINORITIES AND A SEPARATE SINGLE GOAL FOR WOMEN HAVE BEEN ESTABLISHED. THE CONTRACTOR, HOWEVER, IS REQUIRED TO PROVIDE EQUAL EMPLOYMENT OPPORTUNITY AND TO TAKE AFFIRMATIVE ACTION FOR ALL MINORITY GROUPS, BOTH MALE AND FEMALE, AND ALL WOMEN, BOTH MINORITY AND NON-MINORITY. CONSEQUENTLY, THE CONTRACTOR MAY BE IN VIOLATION OF THE EXECUTIVE ORDER IF A PARTICULAR GROUP IS EMPLOYED IN A SUBSTANTIALLY DISPARATE MANNER (EVEN THOUGH THE CONTRACTOR HAS ACHIEVED ITS GOAL FOR WOMEN GENERALLY, THE CONTRACTOR MAY BE IN VIOLATION OF THE EXECUTIVE ORDER IF A SPECIFIC MINORITY GROUP OF WOMEN IS UNDERUTILIZED).

10. THE CONTRACTOR SHALL NOT USE THE GOALS AND TIMETABLES OR AFFIRMATIVE ACTION STANDARDS TO DISCRIMINATE AGAINST ANY PERSON BECAUSE OF RACE, COLOR, RELIGION, SEX, OR NATIONAL ORIGIN.

11. THE CONTRACTOR SHALL NOT ENTER INTO ANY SUBCONTRACT WITH ANY PERSON OR FIRM DEBARRED FROM GOVERNMENT CONTRACTS PURSUANT TO EXECUTIVE ORDER NO. 11246.

12. THE CONTRACTOR SHALL CARRY OUT SUCH SANCTIONS AND PENALTIES FOR VIOLATION OF THESE SPECIFICATIONS AND OF THE EQUAL OPPORTUNITY CLAUSE, INCLUDING SUSPENSION, TERMINATION AND CANCELLATION OF EXISTING SUBCONTRACTS AS MAY BE IMPOSED OR ORDERED PURSUANT TO EXECUTIVE ORDER NO. 11246, AS AMENDED, AND ITS IMPLEMENTING REGULATIONS, BY THE OFFICE OF FEDERAL CONTRACT COMPLIANCE PROGRAMS. ANY CONTRACTOR WHO FAILS TO CARRY OUT SUCH SANCTIONS AND PENALTIES SHALL BE IN VIOLATION OF THESE SPECIFICATIONS AND EXECUTIVE ORDER NO. 11246, AS AMENDED.

13. THE CONTRACTOR, IN FULFILLING ITS OBLIGATIONS UNDER THESE SPECIFICATIONS, SHALL IMPLEMENT SPECIFIC AFFIRMATIVE ACTION STEPS, AT LEAST AS EXTENSIVE AS THOSE STANDARDS PRESCRIBED IN PARAGRAPH (7) OF THESE SPECIFICATIONS, SO AS TO ACHIEVE MAXIMUM RESULTS FROM ITS EFFORTS TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY. IF THE CONTRACTOR FAILS TO COMPLY WITH THE REQUIREMENTS OF THE EXECUTIVE ORDER, THE IMPLEMENTING REGULATIONS, OR THESE SPECIFICATIONS, THE DIRECTOR SHALL PROCEED IN ACCORDANCE WITH 41 C.F.R. § 60-4.8.

14. THE CONTRACTOR SHALL DESIGNATE A RESPONSIBLE OFFICIAL TO MONITOR ALL EMPLOYMENT RELATED ACTIVITY TO ENSURE THAT THE COMPANY EEO POLICY IS BEING CARRIED OUT, TO SUBMIT REPORTS RELATING TO THE PROVISIONS HEREOF AS MAY BE REQUIRED BY THE GOVERNMENT AND TO KEEP RECORDS. RECORDS SHALL AT LEAST INCLUDE FOR EACH EMPLOYEE THE NAME, ADDRESS, TELEPHONE NUMBERS, CONSTRUCTION TRADE, UNION AFFILIATION IF ANY, EMPLOYEE IDENTIFICATION NUMBER WHEN ASSIGNED, SOCIAL SECURITY NUMBER, RACE, SEX, STATUS (E.G., MECHANIC, APPRENTICE TRAINEE, HELPER OR LABORER), DATES OF CHANGES IN STATUS, HOURS WORKED PER WEEK IN THE INDICATED TRADE, RATE OF PAY, AND LOCATIONS AT WHICH THE WORK WAS PERFORMED. RECORDS SHALL BE MAINTAINED IN AN EASILY UNDERSTANDABLE AND RETRIEVABLE FORM; HOWEVER, TO THE EXTENT THAT EXISTING RECORDS SATISFY THIS REQUIREMENT, CONTRACTORS SHALL NOT BE REQUIRED TO MAINTAIN SEPARATE RECORDS.

15. NOTHING HEREIN PROVIDED SHALL BE CONSTRUED AS A LIMITATION UPON THE APPLICATION OF OTHER LAWS THAT ESTABLISH DIFFERENT STANDARDS OF COMPLIANCE OR UPON THE APPLICATION OF REQUIREMENTS FOR THE HIRING OF LOCAL OR OTHER AREA RESIDENTS (E.G., THOSE UNDER THE PUBLIC WORKS EMPLOYMENT ACT OF 1977 AND THE COMMUNITY DEVELOPMENT BLOCK GRANT PROGRAM).

APPENDIX NO. 1

NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY (EXECUTIVE ORDER NO. 11246):

(1) THE OFFEROR'S OR BIDDER'S ATTENTION IS CALLED TO THE "EQUAL OPPORTUNITY CLAUSE" AND THE "STANDARD FEDERAL EQUAL EMPLOYMENT SPECIFICATIONS" SET FORTH HEREIN.

(2) (a) THE GOALS AND THE TIMETABLES FOR MINORITY AND FEMALE PARTICIPATION, EXPRESSED IN PERCENTAGE TERMS FOR THE CONTRACTOR'S AGGREGATE WORK FORCE IN EACH TRADE ON ALL CONSTRUCTION WORK IN THE COVERED AREA, ARE AS FOLLOWS:

TIMETABLES GOALS FOR MINORITY PARTICIPATION IN EACH TRADE (SEE APPENDIX NO. 2)	GOALS FOR FEMALES PARTICIPATION IN EACH TRADE 6.9%
GOALS FOR EACH YEAR (SEE APPENDIX NO. 2)	GOALS FOR EACH YEAR 6.9%

(b) THESE GOALS ARE APPLICABLE TO ALL THE CONTRACTOR'S CONSTRUCTION WORK (WHETHER OR NOT IT IS FEDERAL OR FEDERALLY ASSISTED) PERFORMED IN THE COVERED AREA. IF THE CONTRACTOR PERFORMS CONSTRUCTION WORK IN A GEOGRAPHICAL AREA LOCATED OUTSIDE THE COVERED AREA, IT SHALL APPLY THE GOALS ESTABLISHED FOR SUCH GEOGRAPHICAL AREA WHERE THE WORK IS ACTUALLY PERFORMED. WITH REGARD TO THIS SECOND AREA, THE CONTRACTOR ALSO IS SUBJECT TO THE GOALS FOR BOTH ITS FEDERALLY INVOLVED AND NON FEDERALLY INVOLVED CONSTRUCTION.

(c) THE CONTRACTOR'S COMPLIANCE WITH THE EXECUTIVE ORDER AND THE REGULATIONS AT 41 C.F.R. PART 60-4 SHALL BE BASED ON ITS IMPLEMENTATION OF THE EQUAL OPPORTUNITY CLAUSE, SPECIFIC AFFIRMATIVE ACTION OBLIGATIONS REQUIRED BY THE SPECIFICATIONS SET FORTH AT 41 C.F.R. . 60-4.3(a), AND ITS EFFORTS TO MEET THE GOALS. THE HOURS OF MINORITY AND FEMALE EMPLOYMENT AND TRAINING MUST BE SUBSTANTIALLY UNIFORM THROUGHOUT THE LENGTH OF THE CONTRACT, AND IN EACH TRADE, AND THE CONTRACTOR SHALL MAKE A GOOD FAITH EFFORT TO EMPLOY MINORITIES AND WOMEN EVENLY ON EACH OF ITS PROJECTS. THE TRANSFER OF MINORITY OR FEMALE EMPLOYEE OR TRAINEES FROM CONTRACTOR TO CONTRACTOR OR FROM PROJECT TO PROJECT FOR THE SOLE PURPOSE OF MEETING THE CONTRACTOR'S GOALS SHALL BE A VIOLATION OF THE CONTRACT, THE EXECUTIVE ORDER, AND THE REGULATIONS IN AT 41 C.F.R. PART 60-4. COMPLIANCE WITH THE GOALS WILL BE MEASURED AGAINST THE TOTAL WORK HOURS PERFORMED.

(3) THE CONTRACTOR SHALL PROVIDE WRITTEN NOTIFICATION TO THE DIRECTOR OF THE OFFICE OF FEDERAL CONTRACT COMPLIANCE PROGRAMS WITHIN 10 WORKING DAYS OF AWARD OF ANY CONSTRUCTION SUBCONTRACT IN EXCESS OF $10,000 AT ANY TIER FOR CONSTRUCTION WORK UNDER THE CONTRACT RESULTING FROM THIS SOLICITATION. THE NOTIFICATION SHALL LIST THE NAME, ADDRESS, AND TELEPHONE NUMBER OF THE SUBCONTRACTOR; ESTIMATED DOLLAR AMOUNT OF THE SUBCONTRACT; ESTIMATED STARTING AND COMPLETION DATES OF THE SUBCONTRACT; AND THE GEOGRAPHICAL AREA IN WHICH THE SUBCONTRACT IS TO BE PERFORMED.

(4) AS USED IN THIS NOTICE, AND IN THE CONTRACT RESULTING FROM THIS SOLICITATION, THE "COVERED AREA" IS ***(SEE NOTICE TO BIDDERS).***

APPENDIX NO. 2

THE COMMONWEALTH OF MASSACHUSETTS

SUPPLEMENTAL EQUAL EMPLOYMENT OPPORTUNITY
ANTI DISCRIMINATION AND AFFIRMATIVE ACTION PROGRAM

I. FOR PURPOSES OF THIS CONTRACT, "minority" refers to Asian-Americans, Blacks, Spanish Surnamed Americans, North American Indians, and Cape Verdeans. "Commission" refers to the Massachusetts Commission Against Discrimination.

II. During the performance of this contract, the Contractor and all of (his) Subcontractors (hereinafter collectively referred to as the Contractor), for himself, his assignees, and successors in interest, agree as follows:

1. In connection with the performance of work under this contract, the Contractor shall not discriminate against any employee or applicant for employment because of race, color, religious creed, national origin, age or sex. The aforesaid provision shall include, but not be limited to, the following: employment upgrading, demotion, or transfer; recruitment advertising, recruitment layoff; termination; rates of pay or other forms of compensation, conditions or privileges of employment; and selection for apprenticeship. The Contractor shall post hereafter in conspicuous places, available for employees and applicants for employment, notices to be provided by the Commission setting forth the provisions of the Fair Employment Practices Law of the Commonwealth (M.G.L. Chapter 151B).

2. In connection with the performance of work under this contract, the Contractor, shall undertake in good faith affirmative action measures designed to eliminate any discriminatory barriers in the terms and conditions of employment on the grounds of race, color, religious creed, national origin, age or sex, and to eliminate and remedy any effects of such discrimination in the past. Such affirmative action shall entail positive and aggressive measures to ensure equal opportunity in the areas of hiring, upgrading, demotion or transfer, recruitment, layoff or termination, rate of compensation, and in service or apprenticeship training programs. This affirmative action shall include all action required to guarantee equal employment opportunity for all persons, regardless of race, color, religious creed, national origin, age, or sex. A purpose of this provision is to ensure to the fullest extent possible an adequate supply of skilled tradesmen for this and future Commonwealth public construction projects.

III. 1. As part of his obligation of remedial action under the foregoing section, the Contractor shall maintain on this project a not less than 5 percent ratio of minority employee man hours to total man hours in each job category, including but not limited to bricklayers, carpenters, cement masons, electricians, ironworkers, operating engineers, and those "classes of work enumerated in Section 44F of Chapter 149 of the Massachusetts General Laws.

2. In the hiring of minority journeymen, apprentices, trainees and advanced trainees, the Contractor shall rely on referrals from a multi employer affirmative action program approved by the Commission, traditional referral methods utilized by the construction industry, and referrals from agencies, not more than three in number at any one time, designated by the Liaison Committee or the Commission.

IV. 1. At the discretion of the Commission there may be established for the life of this contract a body to be known as the Liaison Committee. The Liaison Committee shall be composed of one representative each from the agency or agencies administering this project, herein after

called the administering agency, the Commission and such other representatives as may be designated by the Commission in conjunction with the administrating agency.

2. The Contractor (or his agent, if any, designated by him the on-site equal employment opportunity officer) shall recognize the Liaison Committee as an affirmative action body, and shall establish a continuing working relationship with the Liaison Committee, consulting with the Liaison Committee on all matters related to minority recruitment, referral, employment and training.

3. The Contractor shall prepare projected manning tables on a quarterly basis. These shall be broken down into projections, by week, of workers required in each trade. Copies shall be furnished one week in advance of the Commencement of the period covered, and also when updated, to the Commission and Liaison Committee.

4. Records of employment referral orders, prepared by the Contractor, shall be made available to the Commission and to the Liaison Committee on request.

5. The Contractor shall prepare weekly reports in a form approved by the Commission of hours worked in each trade by each employee, identified as minority or non-minority. Copies of these shall be provided at the end of each such week to the Commission and to the Liaison Committee.

V. If the Contractor shall use any subcontractor on any work performed under this contract, he shall take affirmative action to negotiate with qualified minority subcontractors. This affirmative action shall cover both pre-bid and postbid periods. It shall include notification to the Office of Minority business Assistance (within the Executive Office of Communities and Development) or its designee, when bids are in preparation, of all products, work or services for which the Contractor intends to negotiate bids.

VI. In the employment of journeymen, apprentices, trainees and advanced trainees, the Contractor shall give preference, first, to citizens of the Commonwealth who have served in the Armed Forces of the United States in time of war and have been honorably discharged therefrom or released from active duty therein, and who are qualified to perform the work to which the employment relates, and, secondly, to citizens of the Commonwealth generally, and, if such cannot be obtained in sufficient numbers, then to citizens of the United States.

VII. A designee of the Commission and a designee of the Liaison Committee shall each have right of access to the construction site.

VIII. Compliance with Requirements

The Contractor shall comply with the provisions of Executive Order No. 74, as amended by Executive Order No. 116 dated May 1, 1975, and of Chapter 151B as amended, of the Massachusetts General Laws, both of which are herein incorporated by reference and made a part of this contract.

IX. Non-Discrimination

The Contractor, in the performance of all work after award, and prior to completion of the contract work, will not discriminate on grounds of race, color, religious creed, national origin, age or sex in employment practices, in the selection or retention of subcontractors, or in the procurement of materials and rentals of equipment.

X. Solicitations for Sub-Contracts, and for the Procurement of Materials and Equipment

In all solicitations either by competitive bidding or negotiation made by the Contractor either for work to be performed under a subcontract or for the procurement of materials or equipment each potential subcontractor or supplier shall be notified in writing by the Contractor of the Contractor's obligations under this contract relative to non-discrimination and affirmative action.

XI. Bidders Certification Requirement

For Bidders Certification Requirements, please refer to the Form for Bid included in the Proposal Form for this Contract.

XII. Contractor's Certification

The Contractor's certification form must be signed by all successful low bidder(s) prior to award by the contracting agency.

XIII. Compliance - Information, Reports and Sanctions

1. The Contractor will provide all information and reports required by the administering agency or the Commission on instructions issued by either of them and will permit access to its facilities and any books, records, accounts and other sources of information which may be determined by the Commission to affect the employment of personnel. This provision shall apply only to information pertinent to the Commonwealth's supplementary affirmative action contract requirements. Where information required is in the exclusive possession of another who fails or refuses to furnish this information, the Contractor shall so certify to the administering agency or the Commission as appropriate and shall set forth what efforts he has made to obtain the information.

2. Whenever the administering agency, the Commission, or the Liaison Committee believes the General Contractor or any Subcontractor may not be operating in compliance with the terms of this Section, the Commission directly, or through its designated agent, shall conduct an appropriate investigation, and may confer with the parties, to determine if such contractor is operating in compliance with the terms of this Section. If the Commission or its agent finds the General Contractor or any subcontractor not in compliance, it shall make a preliminary report on non-compliance, and notify such Contractor in writing of such steps as will in the judgement of the Commission or its agent bring such Contractor into compliance. In the event that such Contractor fails or refuses to fully perform such steps, the Commission shall make a final report of noncompliance, and recommend to the administering agency the imposition of one or more of the sanctions listed below. If, however, the Commission believes the General Contractor or any Subcontractor has taken or is taking every possible measure to achieve compliance, it shall not make a final report of noncompliance. Within fourteen days of the receipt of the recommendations of the Commission, the administering agency shall move to impose one or more of the following sanctions, as it may deem appropriate to attain full and effective enforcement:

   (a) The recovery by the administering agency from the General Contractor of 1/100 of 1% of the contract award price or $1000 whichever sum is greater, in the nature of liquidated damages or, if a Subcontractor is in non-compliance, the recovery by the administering agency from the General Contractor, to be assessed by the General Contractor as a back charge against the Subcontractor, of 1/10 of 1% of the subcontract price, or $400 whichever sum is greater, in the nature of liquidated damages, for each week that such party fails or refuses to comply;

(b) The suspension of any payment or part thereof due under the contract until such time as the General Contractor or any Subcontractor is able to demonstrate his compliance with the terms of the contract;

(c) The termination, or cancellation, of the contract, in whole or in part, unless the General Contractor or any Subcontractor is able to demonstrate within a specified time his compliance with the terms of the contract;

(d) The denial to the General Contractor or any Subcontractor of the right to participate in any future contracts awarded by the administering agency for a period of up to three years.

3. If at any time after the imposition of one or more of the above sanctions a Contractor is able to demonstrate that he is in compliance with this Section, he may request the administering agency, in consultation with the Commission, to suspend the sanctions conditionally, pending a final determination by the Commission as to whether the Contractor is in compliance. Upon final determination of the Commission, the administering agency, based on the recommendation of the Commission, shall either lift the sanctions or reimpose them.

4. Sanctions enumerated under Sections XIII-2 shall not be imposed by the administering agency except after an adjudicatory proceeding, as that term is used M.G.L. c. 30A, has been conducted. No investigation by the Commission or its agent shall be initiated without prior notice to the Contractor.

XIV. Severability

The provisions of this section are severable, and if any of those provisions shall be held unconstitutional by any court of competent jurisdiction, the decision of such court shall not affect or impair any of the remaining provisions.

A. **Contractor's Certification**

A contractor will not be eligible for award of a contract unless such contractor has submitted the following certification, which is deemed a part of the resulting contract:

CONTRACTOR'S CERTIFICATION

_____

Contractor

certifies that:

1. it intends to use the following listed construction trades in the work under the contract

   _____

   and

2. will comply with the minority manpower ratio and specific affirmative action steps contained herein; and

3. will obtain from each of its subcontractors and submit to the contracting or administering agency prior to the award of any subcontract under this contract the subcontractor certification required by these bid conditions.

_____

(Signature of authorized representative of contractor)

B. Subcontractors' Certification

Prior to the award of any subcontract, regardless of tier, the prospective subcontractor must execute and submit to the Prime Contractor the following certification, which will be deemed a part of the resulting subcontract:

SUBCONTRACTORS' CERTIFICATION

_____

Subcontractor

certifies that:

1. it intends to use the following listed construction trades in the work under the subcontract and _____

2. will comply with the minority manpower ratio and specific affirmative action steps contained herein; and

3. will obtain from each of the subcontractors prior to the award of any subcontract under this subcontract the subcontractor certification required by these bid conditions.

_____

(Signature of authorized representative of subcontractor)

In order to ensure that the said subcontractors certification becomes a part of all subcontracts under the prime contract, no subcontract shall be executed until an authorized representative of the state agency (or agencies) administering this project has determined, in writing, that the said certification has been incorporated in such subcontract, regardless of tier. Any subcontract executed without such written approval shall be void.

APPENDIX NO. 3

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

DISADVANTAGE BUSINESS ENTERPRISE PARTICIPATION PROVISION

APPENDIX NO. 3

TABLE OF CONTENTS

I. DEFINITIONS

A. Authority
B. Bidder
C. Compliance Monitor
D. Contract
E. Contract Price
F. An Original Affidavit
G. Original Letter of Intent
H. Disadvantaged Business Enterprise
I. Small Business Concern
J. Socially and Economically Disadvantaged Individuals
K. Women-Owned Business Enterprise
L. Certification Letter
M. Business Enterprise List
N. Business Enterprise Unavailability Certification
O. Notice of Opportunity to Meet with Authority
P. Qualified
Q. Schedule of Participation by Business Enterprise
R. Successful Bidder
S. Unavailable
T. Reasonable Efforts

II. UTILIZATION OF DISADVANTAGED BUSINESS ENTERPRISE

A. Affirmative Action Obligation
B. Stated Goal
C. Joint Venture
D. Business Enterprise Bidder
E. Contractor Assurances

III. BIDDING REQUIREMENTS AND PROCEDURES PRIOR TO CONTRACT

A. Pre-Bid Conference
B. Bid Submission
C. Responsiveness of Bid
D. Determination of Responsiveness of Bids
1. Investigation and Recommendation by Compliance Monitor
2. Determination by Authority
3. Consideration of Other Bids
4. Failure of Bidder to Participate
E. Amendment of Schedule for Participation by Disadvantaged Business Enterprise

IV. REQUIREMENTS AND PROCEDURES SUBSEQUENT TO CONTRACT AWARD

A. Proposal, Execution and Compliance with Subcontractors
B. Substitution of Subcontractor
   1. Excuse from Entering Subcontractor
   2. Rightful Termination of Subcontracts
   3. Determination of Excuse or Rightful Termination
   4. Alternative Subcontracts
C. Continued Compliance
D. Sanctions for Violations
E. Prompt Payment

V. LIST OF FORMS

Form A Schedule of Participation by Disadvantaged Business Enterprises

Form B Disadvantaged Business Enterprise Participation - Letter of Intent

Form C DBE Affidavit

Form D Disadvantaged Business Enterprise Unavailable Certification

Please submit with bid package, a separate unavailability certification form for each unavailable DBE.

I. DEFINITIONS

As used in this Disadvantaged Business Enterprise Participation Provision ("Provision"), the following terms shall have the following meanings:

A. Authority

The Massachusetts Bay Transportation Authority, or an officer, employee or agent thereof designated by the Authority for the particular purpose involved;

B. Bidder

Any individual, partnership, joint venture, corporation, or firm submitting a general bid, directly or through an authorized representative, for the Contract;

C. Compliance Monitor

The individual or individuals designated from time to time by the Authority to assist and make recommendations to the Authority with respect to compliance with this Provision;

D. Contract

The contract, executed by the Authority and the Successful Bidder, of which this Provision is a part,

E. Contract Price

The total bid price of the Successful Bidder upon which the Contract is awarded;

F. An Original Affidavit

An original affidavit, in the form annexed to this Provision; to be signed by a Principal of a Disadvantaged Business Enterprise.

G. Original Letter of Intent

An original letter, in the form annexed to this Provision, to be signed by a Principal of a Disadvantaged Business Enterprise with respect to certain work under the Contract;

H. Disadvantaged Business Enterprise

A "Disadvantaged Business" or "DBE" means a small business concern as defined pursuant to Section 8(a) of the Small Business Act (15 U.S.C. s.637 (a)) and Implementing Regulations, which is owned and controlled by one or more socially and economically disadvantaged individuals, or is a Women-Owned Business Enterprise as defined in Paragraph K. of this Appendix 3. For purposes of this Provision, owned and controlled means a business:

1. which is at least 51 percent owned by one or more socially and economically disadvantaged individuals, or in the case of a publicly-owned business, at least 51 percent of the stocks of which is owned by one or more socially and economically disadvantaged individuals; and

2. whose management and daily business operations are controlled by one or more of such individuals.

I. SMALL BUSINESS CONCERN

Means a small business as defined pursuant to Section 3 of the Small Business Act and relevant regulations promulgated pursuant thereto.

J. SOCIALLY AND ECONOMICALLY DISADVANTAGED INDIVIDUALS

Means those individuals who are citizens of the United States (or lawfully admitted permanent residents)
and who are Black Americans, Hispanic Americans, Native Americans, Asian-Pacific Americans or Asian-Indian Americans and any other minorities or individuals found to be disadvantaged by the Small Business Administration pursuant to Section 8(a) of the Small Business Act (15 U.S.C. s.637(a)) :

1. **"Black Americans"**, which include persons having origins in any of the Black racial groups of Africa;

2. **"Hispanic Americans,"** which include persons of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish or Portuguese culture or origin, regardless of race;

3. **"Native Americans,"** which include persons who are American Indians, Eskimos, Aleuts, or Native Hawaiians;

4. **"Asian-Pacific Americans,"** which include persons whose origins are Japan, China, Taiwan, Korea, Vietnam, Laos, Cambodia, the Philippines, Samoa, Guam, the U.S. Trust Territories of the Pacific, and the Northern Marianas; and

5. **"Asian Indian American,"** which include persons whose origins are from India, Pakistan, and Bangladesh.

6. Socially disadvantaged individuals are those who have been subjected to racial or ethnic prejudice or culture bias within American society because of their identities as members of groups and without regard to their individual qualities. Personal experiences of substantial and chronic social disadvantage in American society, not in other countries and negative impact on entry into or advancement in the business world because of the disadvantage as defined pursuant to 49CFR Appendix E, Part 26.

   The Personal Net Worth of the principal owner of an Economic Disadvantaged Business may not exceed a threshold of $750,000. In determining net worth, an individual, ownership interest in the disadvantaged firm and the individuals equity in his or her primary place of residence must be excluded from the calculation.

7. Economic disadvantage, economically disadvantaged individuals are socially disadvantaged individuals whose ability to compete in the free enterprise system has been impaired due to the diminished capital and credit opportunities as compared to others in the same or similar line of business who are not socially disadvantaged.

K. A **"Women-Owned Business"** to qualify as a "DBE" means a small business concern as defined pursuant to Section 3 of the Small Business Act and Implementing Regulations, which is owned and controlled by one or more women. For purposes of this provision, owned and controlled means a business:

1. which is at least 51 percent owned by one or more women, or in the case of a publicly-owned business, at least 51 percent of the stocks of which are owned by one or more such individuals; and

2. whose management and daily business operations are controlled by one or more women.

L. Certification Letter

For the purposes of the DBE Provision, this term means the following:

1. A letter from SOMWBA certifying the DBE; or

2. A certification from a local government, state government or federal government entity which is authorized to certify DBE status and which uses the criteria for certification that is equivalent to that used by SOMWBA; or

3. A certification from an agency whose DBE certification process has been approved by FTA; or

4. A certification under Section 8(a) of the Small Business Act (15 U.S.C. s.637(a)).

M. Business Enterprise List

The Authority currently utilizes the business registry entitled, **The State Office of Minority and Women Business Assistance Directory** which is issued by the State Office of Minority and Women Business Assistance (SOMWBA). For the purpose of this provision the term "Business Enterprise List" or "List" shall mean the SOMWBA directory. The companies listed herein as Minority Business Enterprises are identical to those defined by this Provision as Disadvantaged Business Enterprises.

The inclusion of a firm in this Directory is for informational purposes only and does not constitute endorsement of a Contractor, Manufacturer, or Supplier. The Business Enterprise List is available to be viewed at the Authority's Equal Employment Opportunity/Affirmative Action Office.

N. Business Enterprise Unavailability Certification

A written certification, in the form annexed to this Provision, by a Disadvantaged Business Enterprise as to its unavailability for certain work. A SEPARATE UNAVAILABILITY CERTIFICATION FORM IS TO BE FILED FOR EACH UNAVAILABLE DBE.

0. Notice of Opportunity to Meet with Authority

Upon request, a Bidder may be given an opportunity to meet with the Authority with respect to the Authority's determination of the Bidder's compliance with this Provision.

P. Qualified

A DBE contractor is qualified to do specific work if it meets all of the following criteria:

1. it has or is able to obtain any and all licenses required to do such work;

2. it has the necessary experience, organization, technical qualifications, skills and facilities to do such work;

3. it is able to comply with the performance schedule reasonably needed for such work;

4. it does not have an unsatisfactory record of integrity, judgement and performance;

5. it is able to meet the applicable Equal Employment Opportunity requirements; and

6. it is not otherwise ineligible to perform such work under applicable laws and regulations.

Q. Schedule for Participation by Business Enterprise

A schedule, in the form annexed to this Provision, containing certain information with respect to work to be performed by Disadvantaged Business Enterprises.

R. Successful Bidder

The bidder to which the Contract is awarded. Among responsible and responsive Bidders, the one offering the lowest reasonable price, as determined by the Authority, and meeting the DBE requirements of this Provision, shall be awarded the contract. Additionally the ability to meet other contractual obligations, deemed to be appropriate, will be considered before awarding the contract.

S. Unavailable

A Business Enterprise is unavailable to do specific work if:

1. it does not have the knowledge of the terms and specifications of the Contract needed to formulate a proposal to do such work or to decline an opportunity to formulate such a proposal; and

2. it does not intend, or is unable, to make a proposal because of lack of interest, inability to meet the reasonable and ordinary demands connected with doing such work, unwillingness to meet the specifications of such work, unwillingness to work on this project or in this geographic area, or such other reason as is determined by the Authority to be sufficient;

4. a separate DBE unavailability certification form should be utilized for each unavailable DBE. An unavailability certification form is annexed to this provision.

T. Reasonable Efforts

To demonstrate sufficient reasonable efforts to meet the DBE contract goal, a contractor shall document the steps it has taken to obtain DBE participation, including but not limited to the following;

1. Attendance at a prebid meeting, if any, scheduled by the recipient to inform the Contractor of DBE subcontracting opportunities under a given solicitation.

2. Advertisement in general circulation media, trade association publication, and minority-focus media for at least 20 days before bid or proposals are due. If 20 days are not available, publication for a shorter reasonable time is acceptable.

3. Written notification to DBEs that their interest in the contract is solicited;

4. Efforts made to select portions of the work proposed to be performed by DBEs in order to increase the likelihood of achieving the stated goal.

5. Efforts to negotiate with DBEs for specific subbids including at a minimum.

   a. the names, addresses, and telephone numbers of DBEs that were contacted;

   b. a description of the information provided to DBEs regarding the plans and specifications for portions of the work to be performed; and

   c. a statement of why additional agreements with DBEs were not reached;

6. Effort made to assist the DBE contacted in obtaining bonding or insurance required by the contractor or recipient.

7. Concerning each DBE, the contractor contacted but rejected as unqualified, as well as the reasons for the contractor's conclusion;

8. Prime Contractor must document that he/she made adequate good faith efforts to meet the goal, even though he/she did not succeed in obtaining enough DBE participation to do so.

   a. The dollar amount of the participation of each DBE firm contacted by Prime Contractor;

   b. Contractor must determine with certainty if the DBEs are interested by taking appropriate steps to follow up initial solicitations.

   c. Selecting portions of the work to be performed by DBEs in order to increase the likelihood that the DBE goals will be achieved.

   d. Where appropriate, breaking out contract work items into economically feasible units to facilitate DBE participation, even when the prime contractor might otherwise prefer to perform these work items with its own workforce.

   e. Providing interested DBEs with adequate information about the plans, specifications, and requirements of the contract in a timely manner to assist them in responding to a solicitation. The above list of types of actions is not intended to be a mandatory checklist, nor is it intended to be exclusive or

exhaustive. Pursuant to 49CFR appendix A to Part 26 - Guidance Concerning Good Faith Efforts.

II. UTILIZATION OF DISADVANTAGED BUSINESS ENTERPRISES

A. Affirmative Action Obligation

Each Bidder shall take affirmative action, and shall comply with the requirements of the Provision, to achieve the stated goal for the utilization of Disadvantaged Business Enterprises in their performance of work under this Contract. Nothing in this Provision shall be construed to require the utilization of any Disadvantaged Business Enterprise which is either not Qualified or Unavailable. All determinations of compliance or non-compliance with the requirements of this Provision, and of the appropriate consequences of non-compliance, shall be made by the Authority as provided herein. All such determinations shall be final and binding within the Authority and not subject to further administrative review within the Authority. Nothing in this Provision shall be construed to diminish the responsibility of the Authority pursuant to federal and state laws.

B. Stated Goal

The stated goal is to have portions of the work under the Contract performed by Qualified Disadvantaged Business Enterprises for prices totaling not less than 16 percent of the Contract Price. A contractor may count toward its DBE goal 60 percent of the total bid price for its expenditures of its materials and supplies required under a contract and obtained from a DBE regular dealer, and 100 percent of the total bid price of such expenditures to a DBE manufacturer.

C. Joint Venture

A contractor may count toward its DBE goals a portion of the total dollar value of a contract with a joint venture eligible under the standards of this Section III B (3) equal to the percentage of the ownership and controls of the DBE partner in the joint venture. WITH RESPECT TO JOINT VENTURES, WHERE ONE OF THE PRIME CONTRACTORS IS A DBE AND WHERE SUCH DBE'S PARTICIPATION IS COUNTED TOWARD MEETING THE DBE GOAL, SUCH JOINT VENTURES MUST HAVE PRIOR APPROVAL FROM THE AUTHORITY TO BE CONSIDERED ELIGIBLE.

D. Business Enterprise Bidder

A bidder which itself is a Disadvantaged Business Enterprise, may subject to compliance with the applicable requirements of this Provision, achieve the stated goal by complying with the limitation on subcontracting provided under "Subletting or Assignment of Contract" in the Standard Specifications.

E. Contractor Assurances

The Prime Contractor or Subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract.

The Contractor shall carry out applicable requirements of 49CFR, Part 26, in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these

requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the Authority deems appropriate.

III. BIDDING REQUIREMENTS AND PROCEDURES PRIOR TO CONTRACT AWARD

A. Pre-Bid Conference

At the prebid conference which shall be held with respect to the Contract, the Authority shall be available to review with prospective Bidders the steps they must take to comply with this Provision and to assist prospective Bidders with respect thereto. No action or failure to act of the Authority at the prebid conference shall in any way limit or otherwise affect the terms of this Provision or any portion thereof; however, Bidders shall be deemed to have notice of information made available with respect to this Provision at the prebid conference. The Authority will be available to the prospective Bidders for review of and assistance with the procedures for compliance with this Provision for Contacts that do not require a prebid conference.

B. Bid Submission

Each Bidder, as part of its bid submission, shall submit the following:

1. A completed Schedule for Participation by Disadvantaged Business Enterprises, listing those Qualified DBEs with which the Bidder intends to contract for the performance of portions of the work under the Contract, specifying the agreed price to be paid to each such Disadvantaged Business Enterprise for such work, identifying in detail the contract items or parts thereof to be performed by each such Disadvantaged Business Enterprise, including a proposed timetable for the performance of each such contract item and providing other information as may be required by the Schedule. No work shall be included in the Schedule which the Bidder has reason to believe the listed DBE will subcontract, at any tier, to other than a Disadvantaged Business Enterprise.

2. A completed and signed original Letter of Intent for each DBE listed in the Schedule;

3. For the purpose of this contract, the MBTA will accept only DBEs who are:

   a. Currently certified by the State Office of Minority and Women Business Assistance (SOMWBA); or

   b. An out of state firm who has been certified by either a local government, state government or federal government entity authorized to certify DBE status or an agency whose DBE certification process FTA has approved; or

   c.

   d. Certified under Section 8(a) of the Small Business Act (15 U.S.C. s.637(a)). In addition, each DBE must execute an original affidavit stating that there has not been any change in its status since the date of its last certification. A BIDDER MUST ATTACH TO ITS DBE SCHEDULE A COPY OF THE DBE's MOST RECENT CERTIFICATION LETTER OR DOCUMENT PLUS THE ORIGINAL SIGNED AFFIDAVIT AND THE ORIGINAL SIGNED LETTER OF INTENT.

4. For out-of-state firms, the bidder must also attach a copy of the criteria utilized by the certifying agency of the out-of-state firm. The certifying agency must have required at a minimum as a condition that:

   a. Individuals who qualify as disadvantaged must own at least 51% of the business;
   b. The business has been in existence for at least six months; and
   c. The majority owners of the DBE control the day to day management and policy decisions of the firm.

5. In the event the work listed on the Schedule is not sufficient to fulfill the stated goal, a statement by the bidder of the reasons why it believes it is in compliance with this Provision is required. In addition, a list of the names, addresses and telephone numbers of the DBEs contacted by the bidder with respect to the performance of work under the Contract shall be submitted. The listing of a DBE by a Bidder on its Schedule shall constitute a representation by the Bidder that if it is awarded the Contract it will enter into a subcontract with such DBE for the portion of the work and at the price set forth in its bid submission, subject to the terms of this Provision and the Contract. If at the time of bid opening, the MBTA determines that the low bidder has failed to include in its bid package the most recent certification letter or original affidavit for any DBE listed on its DBE Schedule of participation, the bidder will have five days from the date of notification of this failure to present the missing certification letter or original affidavit to the MBTA.

C. Responsiveness of Bid

The total price for work to be performed by a DBE indicated in each Bidder's Bid Schedule for Participation must be sufficient to fulfill the stated goal unless the Bidder shall demonstrate to the satisfaction of the Authority that:

1. It has made every reasonable effort to contact and negotiate with DBEs in an attempt to subcontract work, including every reasonable effort to select the portions of the work proposed to be subcontracted, in order to achieve the stated goal;

2. It was unable, not withstanding such efforts, to achieve the stated goal because DBEs were not Qualified or were Unavailable; and

3. It included in its Schedule such proposed agreements as could be made with such efforts.

The Authority may reject as non-responsive any bid which it determines fails to comply with the applicable requirements of this Provision unless the Authority allows the bid to be amended pursuant to Section III E. Nothing herein shall relieve any Bidder or any contractor performing any work under the Contract from any of the terms, conditions or requirements of the Contract or modify the Authority's rights reserved under "Consideration of Proposals" in the Standard Specifications.

D. Determination of Responsiveness of Bids

1. Investigation and Recommendation by Compliance Monitor

If the apparent low responsive (without regard to the requirements of this provision) and responsible bidder submits a bid which does not meet the DBE stated goal, the bidder will be notified by the Compliance Monitor within 3 days after the bid opening to meet with the compliance monitor at the offices of the Authority or such other place as the compliance monitor may designate. The purpose of this meeting shall be for the Compliance Monitor to consider whether to recommend that the Bidder's bid be determined to be in compliance with the requirements of this Provision or to be non-responsive. At this meeting the Bidder shall have an opportunity to present information and arguments pertinent to its compliance with the applicable requirement. At this meeting, the Bidder shall produce in writing the following information:

a. a detailed statement of the efforts made to contact and negotiate with DBEs, including (I) the names, addresses and telephone numbers of DBEs who were contacted; (ii) a description of the information provided to DBEs regarding the plans and specifications for portions of the work to be performed; and (iii) a detailed statement of the reasons why additional prospective agreements with DBEs, if needed to meet the stated goal, were not reached;

b. a detailed statement of the efforts made to select portions of the work proposed to be performed by DBEs in order to increase the likelihood of achieving the stated goal;

c. as to each DBE contacted, but which the Bidder considers to be not Qualified, a detailed statement of the reasons for the Bidder's conclusion and

d. as to each DBE contacted, but which the Bidder considers to be Unavailable, either (I) a DBE Unavailability Certification signed by the DBE, or (ii) a statement from the Bidder that the DBE refused to give such written certification after reasonable request, and a detailed statement from the Bidder of the reasons for the Bidder's conclusion that the DBE was Unavailable.

The Compliance Monitor may require the Bidder to produce such additional information as the Compliance Monitor deems appropriate and may obtain whatever other and further information, from whatever other sources, deemed appropriate. Not later than five (5) days after the initial meeting with the Bidder, the Compliance Monitor shall make a written recommendation to the Authority, which shall include a statement of the facts and reasons upon which it is based.

2. Determination by Authority

Following receipt of the Compliance Monitor's recommendation, the Authority shall send to the Bidder a Notice of Opportunity to meet with the Authority, enclosing a copy of the Compliance Monitor's recommendation. Such Notice shall indicate the date, time and place at which the Bidder may, if it so requests in writing, meet with the Authority and have an opportunity to present pertinent arguments and information relating to the determination by the Authority of the Bidder's compliance with this Provision. The Authority may request such further information from the Bidder as it deems appropriate, and may rely upon any factual conclusion reported by the Compliance Monitor which is not contradicted by the Bidder. The Authority may also conduct informal conferences, to which the Bidder shall be invited, in which other parties invited by the Authority may offer information relevant to the issues on which its determination will be based. As soon as practicable, the Authority shall make a

determination in writing and setting forth the facts and reasons upon which it is based, whether the bid of such Bidder complies with the requirements of this Provision or is non-responsive. A copy of such determination shall be sent to the Bidder. Such determination shall not affect the power of the Authority to reject the Bidder's bid for any other reasons.

3. Consideration of Other Bids

If the Authority deems it advisable in the interests of expediting the award of the Contract, the procedures set forth in this Section III(D) may be carried out with respect to the bids of one or more additional Bidders at the same time as, or subsequent to, that of the apparent low responsive and responsible Bidder, with each such procedure separately conducted. The Authority shall make its determination in the order of price rank in accordance with Section I (R).

4. Failure of Bidder to Participate

Failure of any Bidder to participate in any proceeding applicable with respect to its bid, after written request by the Compliance Monitor or the Authority, may result in a determination that its bid is non-responsive.

E. Amendment of Schedule for Participation by Disadvantaged Business Enterprise

A Bidder may amend its Schedule for Participation by DBEs only when directed to do so by the Authority. A Contractor must demonstrate good faith in its attempts to subcontract work, including having made every reasonable effort to select the portions of the work proposed to be subcontracted, in order to achieve the stated goal.

IV. REQUIREMENTS AND PROCEDURES SUBSEQUENT TO CONTRACT AWARD

A. Proposal, Execution and Compliance with Subcontractors

The Successful Bidder shall, in the manner prescribed in Art. 6.01A of the Standard Specifications, propose for the Authority's approval, subcontracts corresponding in all respects to the proposed agreements listed on the Successful Bidder's Schedule for Participation by Disadvantaged Business Enterprises included in its bid submission, or on its amended Schedule, if it has been directed to amend its Schedule.

Upon approval by the Authority, the Successful Bidder shall enter into each such approved subcontract and shall thereafter neither terminate any such subcontract nor reduce the scope of the work to be performed by, or decrease the price to be paid to, the DBE thereunder without in each instance the prior written approval of the Authority. The Authority retains the right to approve or disapprove any subcontract with a DBE proposed under this Provision for the same reasons and in the same manner that the Authority may approve or disapprove any other subcontract proposed to it.

If the Authority disapproves a subcontract required to be proposed under this Provision for reasons related to its Form, the Successful Bidder shall propose for approval another subcontract with the same DBE for the same work and at the same price, in a form acceptable to the Authority. If the Authority disapproves a subcontract required to be proposed under this

Provision for any other reason, the Successful Bidder shall be excused from proposing that subcontract and shall be subject to the provisions of Section IV (B) (4).

B. Substitution of Subcontractor

1. Excuse from Entering Subcontractor

If, prior to execution of a subcontract required by this Provision, the Successful Bidder submits a written request to the Authority and demonstrates to the satisfaction of the Authority that; (a) as a result of a change in circumstances beyond its control of which it was not aware and could not reasonably have been aware until subsequent to the date of award of the Contract, (b) a DBE which is to enter into such subcontract has become not Qualified, or □ that the DBE has unreasonably refused to execute the subcontract; the Successful Bidder shall be excused from executing such subcontract.

2. Rightful Termination of Subcontracts

If, after execution of a subcontract required by this Provision, the Successful Bidder submits a written request to the Authority that; (a) as a result of a change in circumstances beyond its control of which it was not aware and could not reasonably have been aware until subsequent to the date of execution of such subcontract; (b) a DBE which entered into such subcontract is found to be unqualified or has committed and failed to remedy a material breach of the subcontract, the Successful Bidder shall be entitled to exercise such rights as may be available to it to terminate the subcontract.

3. Determination of Excuse or Rightful Termination

If the Successful Bidder at any time submits a written request to the Authority under the provisions of either Section IV (B) (1) or Section IV (B) (2), the Authority, as soon as practicable, shall determine whether the Successful Bidder has made the requisite demonstration, and shall not determine that such determination has not been made without first providing the Successful Bidder, upon notice, an opportunity to present pertinent information and arguments.

4. Alternative Subcontracts

If the Successful Bidder is excused from proposing a subcontract under Section IV(A) or from executing a subcontract under Section IV (B) (1), or rightfully terminates a subcontract under Section IV(B) (2), and without such subcontract the Successful Bidder will not achieve the stated goal, the Successful Bidder shall within 15 days of written notification from the Authority make every reasonable effort to propose and enter into an alternative subcontract or subcontracts for the same work to be performed by another Qualified Disadvantaged Business Enterprise(s) for a contract price or prices totaling not less than the contract price under the excused or terminated subcontract, less all amounts previously paid thereunder. The Successful Bidder shall be deemed to satisfy the requirements of this Section IV (B) (4) if, within 15 days:

a. it shall propose and enter each such alternative subcontract for the same work; or

b. it demonstrates to the satisfaction of the Authority that it has made every reasonable effort to contact and negotiate with DBEs in an attempt to

subcontract the work because DBEs were (I) not Qualified; (ii) Unavailable; or (iii) although Qualified and not Unavailable, unwilling or unable to propose a price for such work equal to or less than the greater of the price originally scheduled for such work (less all amounts previously paid therefor), or the price stated in another bona fide proposal, of which such DBEs had knowledge, submitted by another DBE(s) to which the Successful Bidder proposes to subcontract such work; or

c. it shall propose and enter into subcontracts with another Qualified DBE(s), for prices totaling the price originally scheduled for such work (less all amounts not previously paid therefore) for the performance of other work not included in its Schedule or amended Schedule.

In any situation covered by this Section IV (B) (4), the Compliance Monitor shall promptly meet with the Successful Bidder and provide it an opportunity to demonstrate compliance with these requirements. The Compliance Monitor shall, as promptly as practicable, recommend to the Authority whether the Successful Bidder should be determined to be in compliance with these requirements. The Compliance Monitor may require the Successful Bidder to produce such information as the Compliance Monitor deems appropriate and may obtain whatever other and further information from whatever sources the Compliance Monitor deems appropriate. A copy of the Compliance Monitor's recommendation shall be sent promptly to the Successful Bidder. The Compliance Monitor shall not make his recommendation under this paragraph without giving the Successful Bidder notice and an opportunity to present pertinent information and arguments.

C. Continued Compliance

1. The Authority shall monitor the Compliance of the Successful Bidder with the requirements of this Provision during the course of the work to be performed under the Contract. The Successful Bidder shall permit the Authority to have access to the job site and to necessary records and to examine such information as the Authority deems appropriate for the purpose of investigating and determining compliance with this Provision, including, but not limited to, manning tables, records of expenditures, change orders, observations at the job site and contracts between the Successful Bidder and other parties entered into during the life of the Contract. THE SUCCESSFUL BIDDER MUST CERTIFY, ON FORMS PROVIDED BY THE AUTHORITY, THE DOLLAR VALUE OF WORK ACCOMPLISHED BY EACH SUBCONTRACTOR. THIS CERTIFICATION MUST ACCOMPANY EACH PAY ESTIMATE.

   FAILURE TO SUBMIT INFORMATION REQUESTED BY THE AUTHORITY WITHIN SEVEN (7) DAYS MAY RESULT IN SANCTIONS LISTED UNDER SECTION IV (D) OF THIS PROVISION.

2. The Contractor shall permit the authorized representatives of the Massachusetts Bay Transportation Authority, U.S. Department of Transportation and the Comptroller General of the United States to inspect and audit all data and records of the Contractor relating to its performance under the Disadvantaged Business Enterprise Participation Provision of this Contract through the expiration of three years after completion of the Contract with which Federal funds are used.

D. Sanctions for Violations

If at any time the Authority has reason to believe that the Successful Bidder is in violation of its obligations under this Provision, or has otherwise failed to comply with this Provision, the Authority may, in addition to pursuing any other available legal remedy, commence proceedings to impose such sanctions. Such sanctions may include, but are not limited to, one or more of the following:

1. the suspension of any payment or part thereof due the Successful Bidder until such time as the
issues concerning the Successful Bidder's compliance are resolved;

2. the termination or cancellation of the Contract in whole or in part unless the Successful Bidder is able to demonstrate within a reasonable time its compliance with the terms of this Provision; and

3. the denial to the Successful Bidder of the right to participate in any further Contracts awarded by the Authority for a period of not longer than three (3) years.

No such sanction shall be imposed by the Authority upon the Successful Bidder without an adjudicatory proceeding conducted by the Authority.

E. PROMPT PAYMENT

In accordance with the Department of Transportation's Disadvantage Business Enterprise Regulations 40CFR, Part 26; all prime contractors are required to pay subcontractors for satisfactory performance of their contracts no later than 15 business days from receipt of each payment the MBTA makes to the prime contractor.

The prime contractor shall also promptly return any retainage payments to the subcontractor within 10 business days after the subcontractors work is satisfactorily completed.

All prime contractors are required to include in their subcontracts language assuring that the prime contractor and subcontractors will use appropriate dispute resolution mechanisms to resolve payment disputes.

If the prime contractor determines the work of the subcontractor to be unsatisfactory, it must notify the MBTA's Construction Project Manager, Contract Administration Department, and DBE Coordinator/ Contract Compliance Office, where applicable. Any delay or postponement of payment among the parties may take place only for good cause and with prior written approval from the MBTA.

The Authority reserves the right to not make payment to the prime contractor for work performed by subcontractors, DBEs and non-DBEs, unless and until the prime contractor ensures that the subcontractors are promptly paid for the work they have performed.

The prime contractor may be required to provide certified proof of payment to all subcontractors before any subsequent payments to prime contractors are made by the Authority.

Failure by the prime Contractor to comply with this requirement will be construed to be a breach of contract and subject to termination or sanctions specified in the contract.

Form A

SCHEDULE OF PARTICIPATION OF DISADVANTAGED BUSINESS ENTERPRISE

(TO BE ATTACHED TO THE BID FORM)

PROJECT No._____

LOCATION _____

_____

(NAME OF PRIME BIDDER)

NAME OF DISADVANTAGED BUSINESS	ADDRESS	TYPE OF WORK AND CONTRACT ITEMS OR PARTS THEREOF TO BE PERFORMED	PROJECTED START AND FINISH DATE FOR WORK	AGREED PRICE

A COPY OF THE DBE'S MOST RECENT CERTIFICATION AND AN ORIGINAL AFFIDAVIT MUST BE ATTACHED TO THIS SCHEDULE.

Form B

MBTA Contract No._____
Description _____

DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION
LETTER OF INTENT

To: _____
(Name of Prime Bidder)

The undersigned intends to perform work in connection with the above project as (check one):

_____ an individual _____ DBE
_____ a partnership _____ a joint venture
_____ a corporation

The Disadvantaged Business status of the undersigned is confirmed
a. on the reference list of Disadvantaged Business Enterprises dated _____, or
b. on the attached Disadvantaged Business Enterprise identification Statement.

The undersigned is prepared to perform the following work in connection with the above project, (Specify in detail particular work items or parts thereof to be performed):

_____
_____
_____
_____
_____

at the following price: _____

You have projected the following commencement date for such work, and the undersigned is projecting completion of such work as follows:

Items	Projected Commencement Date	Projected Completion Date
_____	_____	_____
_____	_____	_____
_____	_____	_____

The above work will not be sublet to a non-Disadvantaged Business Enterprise at any tier. The undersigned will enter into a formal agreement for the above work with you, conditioned upon your execution of a contract with the MBTA.

Date_____

_____
Name of Disadvantaged Business Enterprise

By_____

Form C MBTA Contract No.

DBE AFFIDAVIT

STATE OF_____ (Date _____)

COUNTY OF _____ S.S.

The undersigned being duly sworn, deposes and says that he/she is the

_____
(sole owner; partner; president; treasurer; or other duly authorized official of a corporation)

of _____
(Name of DBE)

and certifies that since the date of its certification by

_____
(SOMWBA or out-of-state certification agency)

the certification has not been revoked nor has it expired nor has there been any change in the minority status of
(Name of DBE)

_____
(Signature and Title of
Person Making Affidavit)

Sworn to before me this _____ day of _____ 20

_____
(Notary Public)

NOTE: The Bidder must attach the DBEs most recent certification letter or document to this affidavit.

Form D

DISADVANTAGED BUSINESS ENTERPRISE UNAVAILABLE CERTIFICATION

I, _____ , _____
(Name) (Title)

of _____ , certify that on
(Prime Bidder) (Date)

I contacted the following Disadvantaged Business Enterprise to obtain a bid for work items to be performed on MBTA Contract No.

Disadvantaged Contractor	Work Items Sought	Form of Bid Sought (i.e., unit price, materials & labor, labor only, etc.)
_____	_____	_____
_____	_____	_____
_____	_____	_____

To the best of my knowledge and belief, said Disadvantaged Business Enterprise was unavailable for work on this project, or unable to prepare a bid for the following reason(s):

Signature: _____

Date: _____

_____ , was offered an opportunity to bid on the
(Name of Business Enterprise)

above-identified work on _____ by _____
(Date) (Source)

The above statement is a true and accurate account of why I did not submit a bid on this project.

_____
(Signature of Disadvantaged
Business Enterprise)

_____ (Title)

_____ (Date)

A SEPARATE UNAVAILABILITY CERTIFICATION FORM SHOULD BE COMPLETED FOR EACH DBE

CONSTRUCTION SPECIFICATIONS

FOREWORD

The Authority's "STANDARD SPECIFICATION, BIDDING AND CONTRACT REQUIREMENTS AND DIVISION 1 – GENERAL REQUIREMENTS, dated November 1983"; available at a charge of $5.00 each, and "STANDARD SPECIFICATIONS, CONSTRUCTION, January 1980"; available at a charge of $15.00 either (NEITHER CHARGE IS REFUNDABLE). Copies are available in separate volumes from the MBTA Contract Administration Office, Massachusetts Bay Transportation Authority, Transportation Building, 10 Park Plaza, Boston, MA 02116-3975

The Standard Specifications "Division 1 – General Requirements" are applicable to the work of this Contract by reference as they may be modified, amplified, or added to by these Division 1 – General Requirements Specifications. The Division 1 – General Requirements Specifications Sections are a modified format of the Construction Specification Institute (CSI)

Those Sections of the Standard Specifications – Construction which are cited herein are applicable to the work of this contract as they may be modified, amplified, or added to by these Specifications. The Contractor shall be responsible for obtaining all design manuals, standards, specifications and design details specified herein.

Cross references to Sections, Articles, Paragraphs and Sub-Paragraphs shall refer to the Standard Specifications cited above, as noted.

CONSTRUCTION SPECIFICATIONS
TABLE OF CONTENTS

SECTION		NO. OF PAGES
DIVISION 1:	**GENERAL REQUIREMENTS**	
01010	Summary of Work	3
01020	Allowances	2
01070	Abbreviations and Definitions	2
01150	Measurement and Payment	6
01300	Submittals	2
01322	Construction Schedule	8
01331	Champs Management System Requirements	3
01400	Quality Control	15
01500	Construction Temporary Facilities and Temporary Controls	1
01520	Procedure for Work Vehicles	3
01545	Protection of Work and Property	1
01550	Hot Work	4
01560	Temporary Controls	1
01567	Health and Safety Plan	4
01568	Construction Safety	92
01569	System Safety Certification	11
01570	Traffic Regulation	2
01572	Limitations of Operations	8
01580	Project Identification and Signs	3
01590	Field Offices and Sheds	6
01700	Contract Closeout	3

DIVISION 2: SITE CONSTRUCTION

02090	Lead-Based Paint Abatement	29
02100	Site Preparation	6
02200	Earthwork	5
02400	Drainage and Sewer Systems	2
02444	Chain-Link Fence and Gates	2
02509	Subbase And Base Course	1
02513	Bituminous Concrete Pavement	4
02515	Asphalt Block	6
02525	Granite Curbing and Edging	4
02577	Pavement Marking	1
02650	Existing Site Utilities	8
02800	Exterior Conduit Systems	2
02830	Site Improvements	6
02901	Rubber Rail Seal	3
02950	Planting	4

DIVISION 3: CONCRETE

03100	Concrete Formwork	3
03200	Concrete Reinforcement	3
03300	Cast-In-Place Concrete	11
03310	Portland Cement Concrete	5
03410	Structural Precast Concrete	7

03604	Non-Shrink Construction Grout	3
DIVISION 5:	**METALS**	
05041	Hot-Dip Galvanizing	3
05500	Miscellaneous Metal	3
DIVISION 6:	**WOOD AND PLASTICS**	
06150	Rough and Finish Carpentry	3
DIVISION 7:	**THERMAL AND MOISTURE PROTECTION**	
07920	Sealants and Caulkings	2
DIVISION 8:	**DOORS AND WINDOWS**	
08800	Glazing	5
DIVISION 9:	**FINISHES**	
09360	Modular Tactile Surfaces	5
09900	Painting	17
09910	Shop Painting of Hot-Dip Galvanized Steel	6
DIVISION 10:	**SPECIALTIES**	
10400	Fiberglass Signs	7
10426	Tactile Signs	4
DIVISION 14:	**CONVEYING SYSTEMS**	
14561	Manually Operated Mobile Lifts	4

DIVISION 16: ELECTRICAL

16050	Basic Materials and Methods for Electrical Work	4
16450	Grounding	2
16500	Lighting	2
16471	Distribution And Branch Circuit Panelboards	2

SECTION 01010

SUMMARY OF THE WORK

1.01 GENERAL

A. This Section specifies the general requirements for Summary of the Work in accordance with Standard Specifications Division 1 - General Requirements Section 01010 except as modified herein:

1. The Standard Specification which includes the Instructions to Bidders, General Conditions; and Divisions 1 through 16.

2. The Contract Specifications which includes the Notice to Bidders; Instructions to Bidders; Form for Bid; Various forms and exhibits; Supplementary Conditions; Federal and State requirements; and applicable Sections of Divisions 1 through 16.

3. The Work shall be done in conformance to an in accordance with these Specifications and the Contract Drawings listed below.

MBTA Plan Number	Sheet No.	Title
161138	G-1	TITLE SHEET
161139	G-2	INDEX OF DRAWINGS
161140	G-3.0	ABBREVIATIONS
161141	G-3.1	SYMBOLS SHEET 1
161142	G-3-2	SYMBOLS SHEET 2
161143	G-4	GENERAL NOTES
CIVIL		
161144	D-1	EXISTING CONDITIONS/DEMOLITION PLAN – BROOKLINE VILLAGE
161145	D-2	EXISTING CONDITIONS/DEMOLITION PLAN – LONGWOOD STATION
161146	C-1	SITE PLAN PLATFORM/ROADWAY BROOKLINE VILLAGE
161147	C-2	SITE PLAN PLATFORM/ROADWAY LONGWOOD STATION

161148	C-3.0	TYPICAL SECTIONS BROOKLINE VILLAGE
161149	C-3.1	TYPICAL SECTIONS LONGWOOD STATION
161150	C-4	TIE AND GRADING PLAN BROOKLINE VILLAGE
161151	C-5	TIE AND GRADING PLAN LONGWOOD STATION
161152	C-6	SHELTER PART PLANS BROOKLINE VILLAGE
161153	C-7	SHELTER PART PLANS LONGWOOD STATION
161154	C-8	PLATFORM EDGE DETAILS
161155	C-9	TYPICAL CONSTRUCTION DETAILS PLATFORM TRACK CROSSING
161156	C-10	TYPICAL CONSTRUCTION DETAILS PAVEMENT CURB RAMP
161157	C-11	MISCELLANEOUS DETAILS
161158	C-12	UTILITY DETAILS SHEET 1
161159	C-13	SIGN FRAME TYPES AND DETAILS SHEET 1
161160	C-14	SIGN FRAME TYPES AND DETAILS SHEET 2
161161	C-15	SIGN DETAILS
161162	C-16	SUGGESTED CONSTRUCTION STAGING PLAN STAGE I BROOKLINE VILLAGE
161163	C-17	SUGGESTED CONSTRUCTION STAGING PLAN STAGE II BROOKLINE VILLAGE
161164	C-18	SUGGESTED CONSTRUCTION STAGING PLAN STAGE I LONGWOOD STATION

161165	C-19	SUGGESTED CONSTRUCTION STAGING PLAN STAGE II LONGWOOD STATION
LANDSCAPING		
161166	L-1	PAVING DETAILS CURB/SIDEWALK
161167	L-2	PAVING DETAILS BLOCK PAVERS
161168	L-3	SITE FURNISHINGS
STRUCTURAL		
161169	S-1	GENERAL STRUCTUYRAL NOTES
161170	S-2	SHELTER FOUNDATIONS
161171	S-3	STAIRS/WALLS LONGWOOD STATION
ELECTRICAL		
161172	E-1	ELECTRICAL LEGEND, GENERAL NOTES AND DETAILS
161173	E-2	ELECTRICAL SITE PLAN BROOKLINE VILLAGE
161174	E-3	ELECTRICAL SITE PLAN LONGWOOD STATION
161175	E-4	ELECTRICAL DETAILS BROOKLINE VILLAGE
161176	E-5	ELECTRICAL DETAILS AND POWER ONE LINE DIAGRAM LONGWOOD STATION

1.02 CONTRACT DESCRIPTION, COMMENCEMENT AND COMPLETION TIMES

A. Description

1. The work of this Contract shall consist of, but is not limited to, furnishing labor, materials, and equipment for the complete and satisfactory execution of the work in conformance with the Contract Plans and Specifications for the general construction necessary to make Longwood and Brookline Village MBTA Green Line (D Line) stations fully accessible in compliance with the Americans with Disabilities Act (ADA) of 1990 and in support of the new MBTA Low Floor Vehicles (LFV).

2. The Work shall consist of, but not be limited to, phased demolition, construction, reconstruction, and relocation of the following systems: phased site work, landscaping, platforms, tactile platform edging, track crossings, curbs, sidewalks, fencing, utilities,

ductwork, manholes, lighting systems, ramps, removing and resetting passenger shelters, site furnishings and station signage.

3. The Contractor shall survey the site and verify all proposed and existing conditions, including their dimensions and elevations. Any existing condition that is not consistent with the Drawings or that will not provide the required accessibility and operations clearances shall be identified and submitted to the Engineer for direction.

4. The Contractor shall coordinate the proposed work of all disciplines before the work is installed.

5. The Contractor shall perform station work on the project without impacting the existing overhead catenary wire, conduits and structures.

6. The Authority will furnish the following items/materials/products to the Contractor for installation under this Contract.

   a. Sand Bins, Section 02830

B. Location

1. Brookline Village Station, Station Street, Brookline, MA
2. Longwood Station, Chapel Street, Brookline, MA

C. Commencement and Completion Times

1. The Contractor shall commence the Work in accordance with the General Conditions, Article 6.02, and the Supplementary Conditions Article 6.02 and the Bid Form.

2. The Contractor shall complete the Work within the number of calendar days specified in the Supplementary Conditions, Article 6.02 and in accordance with Standard Specifications – Bidding and Contract Requirements and Division 1 – General Conditions as amended by Supplementary Conditions and as indicated on the Bid Form.

3. From August 4, 2007 through August 31, 2007, the Green Line will be closed to revenue service between Fenway and Reservoir Stations. During that period, the Contractor will generally be allowed unrestricted access from 7:00 A.M to 7:00 P.M., Monday through Saturday. There will however, be maintenance of way activities that will take place during that period and all access must be coordinated. The Contractor is expected to take full advantage of this opportunity.

END OF SECTION

SECTION 01020

ALLOWANCES

1.01 DESCRIPTION

This Section specifies allowances for all services, personnel, labor, materials, and equipment necessary to perform the work as specified herein. The Contractor shall include in his bid proposal the allowance for each item listed. Except for when the Contractor performs the work, he shall not add any Contractor markups, including overhead and profit, except as noted, to these allowance items. The work is further specified in Section 01010 and in the applicable Construction Specifications sections referenced herein.

1.02 ALLOWANCE ITEMS

A. EXISTING SITE UTILITIES, Section 02650. Include an allowance amount of **$2,000** for Telephone Relocation, Item 0211.488 for Telephone Company and Utility Relocation.

B. EXISTING SITE UTILITIES, Section 02650. Include an allowance amount of **$1,000** for Electric Company payments - Item No. 0130.432, for Electrical Company services.

C. LEAD-BASED PAINT ABATEMENT, Section 02090. Include an allowance amount of **$22,000** for Removal of Lead Based Paint.

D. CONSTRUCTION SAFETY, Section 01568. Include an allowance amount of **$150,000** for Traffic Officers Services.

1.03 MEASUREMENT

Allowances will be made to reimburse the Contractor for work and materials performed and supplied by the Contractor and others as specified herein and as further specified in the applicable Construction Specifications Sections.

1.04 PAYMENT

A. Payment for allowances will be based upon receipted invoices and signed receipts, without charges for Contractor overhead and profit (except when the Contractor performs the work) submitted for the actual work performed.

B. Before permitting work to begin under any allowance, the Contractor shall request an itemized written estimate of cost from the Railroad, utility companies, private firms, subcontractors, and City and State agencies for the work to be performed. The Contractor shall submit these written estimates to the Engineer for review and approval. For work performed by the Contractor, he shall be reimbursed in accordance with MBTA Standard Specifications, Division 1 - General Requirements, Section 01150, Article 1.05, paragraph B.2. No payments exceeding the approved amounts will be made by the Authority.

C. The Contractor shall submit receipted copies of itemized invoices for such work to the Authority for partial payments. Payment will be based upon receipted invoices and signed receipts from the utility companies, private firms, Railroad, subcontractors or the City and/or State agencies to the Contractor, four copies of which shall be submitted to the Authority.

D. The final payment for allowances under this Contract will be withheld until the Contractor has paid each affected utility company, private firm, Railroad, subcontractor, or City and/or State agency for all costs in connection with work specified herein.

E. Each allowance will be adjusted to the actual amount paid by the Contractor for such work done.

1.05 PAYMENT ITEMS

ITEM NO.	DESCRIPTION	UNIT
0130.432	Electric Company	Allowance
0130.430	Traffic Officers Services	Allowance
0211.488	Telephone Relocation	Allowance
0212.152	Lead-Based Paint Abatement	Allowance

END OF SECTION

SECTION 01070

ABBREVIATIONS AND DEFINITIONS

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section specifies the general requirements for Abbreviations and Definitions in accordance with Standard Specifications Division 1 - General Requirements Section 01070, except as modified herein.

1.02 ABBREVIATIONS AND NAMES

A. following abbreviations as referenced in the Contract Documents are defined to mean:

AAB	Architectural Access Board
ADA	Americans with Disabilities Act
ADAAG	Americans with Disabilities Act Access Guidelines
ALSC	American Lumber Standards Committee
CDA	Copper Development Association
LRAP	Light Rail Accessibility Program
MAAB	Massachusetts Architectural Access Board
NGR	National Grading Rule
NLGA	National Lumber Grades Authority (Canadian)
NRCA	National Roofing Contractors Associations
RIS	Redwood Inspection Service
SPIB	Southern Pine Inspection Bureau
WCLIB	West Coast Lumber Inspection Bureau
WWPA	Western Wood Products Association

1.04 DEFINITION OF TERMS

A. Wherever in the Contract Documents the following technical terms or pronouns in place of them are used, the intent and meaning shall be:

33. He - He or she.

1.05 ADDITIONAL DEFINITIONS

See the General Conditions and other Sections of the Specifications and Contract Drawings.

END OF SECTION

SECTION 01150

MEASUREMENT AND PAYMENT

1.01 DESCRIPTION

A. This Section specifies the general requirements for Measurement and Payment in accordance with Standard Specifications Division 1 - General Requirements Section 01150 except as modified herein.

1.05 PAYMENT FOR EXTRA WORK

B. Payment for work or materials for which no price is contained in the Contract.

1. If the Engineer directs, the Contractor shall submit promptly in writing to the Engineer an offer to do the required work on a lump sum or unit price basis, as specified by the Engineer. Unless otherwise directed, the stated price shall be divided so as to show that it is the sum of: (a) estimated cost of direct labor, materials, and the use of equipment, plus 10 percent of this total for overhead; (b) actual cost of Workmen's Compensation and Employer's Liability Insurance, Health, Welfare and Pension Benefits, Social Security deductions, and Employment Security Benefits and such additional fringe benefits which the Contractor is required to pay as a result of Union Labor Agreements and/or is required by authorized governmental agencies; (c) a reasonable percent of the total (a) and (b) shall be negotiated for profit utilizing the procedure outlined under this Article, paragraph B.3; (d) the estimated proportionate cost of surety bonds.

2. Unless an agreed lump sum and /or unit price is obtained from above and is so stated in a Supplemental Agreement or an Extra Work Order the Contractor shall accept as full payment for work or materials for which no price agreement is contained in the Contract an amount equal to the following: (a) the actual cost for direct labor, material (less value of salvage, if any) and use of equipment (see below), plus 10 percent of this total for overhead; (b) actual cost of Workmen's Compensation and Employer's Liability Insurance, Health, Welfare and Pension Benefits, Social Security deductions, and Employment Security Benefits and such additional fringe benefits which the Contractor is required to pay as a result of Union Labor Agreements and/or is required by authorized governmental agencies; (c) a reasonable percent of the total (a) and (b) shall be negotiated for profit utilizing the procedure outlined under this Article, paragraph B.3; (d) the estimated proportionate cost of surety bonds. The actual cost of use of equipment (except small tools and manual equipment) will be the actual and necessary operating expenses of such equipment power and fuel for the same, and a reasonable rental for the same as determined by the Engineer.

3. A reasonable percent of the total (a) and (b) for Items 1 and 2 above shall be negotiated for profit on each Extra Work Order utilizing the following weighted guidelines:

(a) Breakdown:

Profit Calculation Summary Chart

FACTOR	WEIGHT (W)		RATE FACTOR (R=.03 to .08)	PROFIT VALUE
1. Degree of Risk				
General Issues of Concern	10	x	=	
Labor Productivity	15	x	=	
Pricing	15	x	=	
Availability of Materials	5	x	=	
2. Relative Difficulty of Work	15	x	=	
3. Size of Job	15	x	=	
4. Period of Performance	15	x	=	
5. Subcontracting	10	x	=	
TOTAL	100			

(b) Based on the Factors for each Work Order, the Weight (W) for each Factor shall have a Rate Factor (R) from .03 to .08 as indicated below. The Profit Value (V) shall be obtained by multiplying the Rate Factor (R) by the Weight (W). The sum of the Profit Value column represents the fair and reasonable profit percentage as determined by the Factors of the particular Extra Work Order.

DEFINITION OF PROFIT RATE FACTORS

1. Degree of Risk:

   Where the Work associated with a Extra Work Order involves no risk to the Contractor, or the degree of risk is very small, the Rate Factor should be .03; as the degree of risk increases, the Rate Factor should be increased up to a maximum of .08. The Degree of Risk has been determined to include but not be limited to the following major factors:

   a) General Issues of Concern
   b) Labor Productivity
   c) Pricing
   d) Availability of Materials

2. Relative Difficulty of the Work involved:

   If the modified Work is most difficult and complex the Rate Factor should be .08 and should be proportionately reduced to .03 on the simplest of jobs.

3. Size of job:

   If the sum of the modified Work (direct costs) is not in excess of 5% of the base Contract work or $25,000, the Rate Factor shall be .08. Work greater than 10% of the base Contract Work or $50,000 shall

have a Rate Factor of .03. Work estimated between 5% ($25,000) and 10% ($50,000) shall be proportionately rated from .08 to .03.

4. Period of performance:

A change during the early phases of a contract shall have a Rate Factor of .03 and should be proportionately increased to .08 as the period of impact approaches the substantial completion. Additionally, the Rate Factor shall be >03 for a time extension less than 10 days to a defined Milestone and as the potential time extension to a defined Milestones increases the Rate Factor shall also proportionately increase to .08.

5. Subcontracting:

The Rate Factor shall be inversely proportional to the amount of subcontracting. Where 66 percent or more of the Work is to be subcontracted, the Rate Factor shall be .08 and where 90% to 100% of the Work is performed by the Contractor's own forces the Rate Factor shall be .03. If the amount of subcontracting is estimated between 11% and 65% of the Work, the Rate Factor shall be proportionately rated from .08 to .03.

C. Equipment Rates

In the event there arises the need for determination of costs for use of equipment as part of "actual costs" or "cost of performance" or "damages" under General Conditions, Section 00700, Articles 2.09, 5.19, 6.07; Section 01150, Measurement and Payment, Articles 1.03 and/or 1.05; or under Chapter 30 of the Massachusetts General Laws, such costs for use of equipment shall be established in accordance with the following:

1. "Construction equipment" as used herein means equipment in sound workable condition, either owned or controlled by the Contractor or the subcontractor at any tier, or obtained from a commercial rental source, and furnished for use under the Contract.

2. Allowable hourly ownership and operating costs for Contractor-owned or subcontractor-owned equipment shall be determined as follows:

   a. Actual cost data from the Contractor's accounting and operating records shall be used whenever such data can be determined for hourly ownership and operating costs for each piece of equipment, or groups of similar serial or series equipment. Actual costs shall be limited to booked costs of the annual accounting period or periods during which the equipment was utilized on the Contract, and will not include estimated costs not recorded and identifiable in the Contractor's formal accounting records. The Contractor shall afford Authority auditors full access to all accounting, equipment usage, and other records necessary for development or confirmation of actual hourly cost rates for each piece of equipment, or groups of similar serial or series equipment. The Contractor's refusal to give such full access shall invalidate any request or claim for payment of the equipment costs. When costs cannot be determined from the Contractor's records, hourly equipment cost rates may be determined under "b." below.

   b. When the Engineer ascertains that it is not practicable to determine actual equipment cost rates or elements thereof from the Contractor's records, hourly equipment cost rates or elements shall be determined by the use of rate schedules or the formula developed from the "Rental Rate Blue Book" (Volume 1) published by Equipment Watch.:

(1) Hourly rates shall be developed by dividing monthly rates by 176 hours per month (the "weekly," "hourly" and "daily" rates listed in the "Blue Book" will not be used);

(2) Rates shall in all cases be adjusted by application of Rate Adjustment Tables (machine age adjustment) plus adjustment to eliminate Equipment Overhead plus Regional Adjustment; and

(3) Rates shall be further reduced by 20 percent to eliminate duplicate and excessive costs, except that the rates shall instead be reduced by 75 percent to determine standby rates.

The number of hours to be paid for shall be the number of hours that the equipment is actually used on a specific force account activity. The "current revisions" to the Blue Book will be used in establishing rates. The "current revision" applicable to specific force account work will be the "current revision" as of the first day of work performed on that force account work and that rate will apply throughout the period the force account work is being performed. In all cases, the Engineer reserves the right to utilize, in preference to Blue Book rates, equipment cost rates based upon actual costs per accounting records or hybrid rates as described above.

c. In those cases where a 10 percent additive for overhead is to be superimposed on the equipment costs provided in Section 00700, Article 2.09, and Section 01150, Article 1.05, equipment cost rates determined under (a) and (b) shall exclude any overhead costs such as equipment insurance, licenses or taxes. The 10 percent additive shall compensate the Contractor for all overhead costs, including equipment overhead, general superintendence, small tools, manual equipment, field overhead and central office overhead. Where the 10 percent overhead additive is not applicable, overhead items clearly related to equipment, (equipment insurance, licenses, taxes), shall be included in the equipment rates; provided, however, that such costs shall be identified and eliminated from any other direct or indirect costs or damages payable by the Authority under the Contract. No element of profit shall be allowable in equipment cost rates for Contractor-owned equipment; it being understood that a reasonable percent of profit in accordance with Article 1.05, Paragraph B, Item 3 will be superimposed upon equipment costs when called for by the Contract.

3. Reasonable hourly costs of renting equipment are allowable subject to Contractor production of auditable records supporting actual costs incurred, provided further that:

a. Costs such as fuel, lubricants, and minor or running repairs incident to operating such rented equipment that are not included in the rental rate are allowable.

b. Costs incident to major repair and overhaul of rental equipment are not allowed.

c. Charges for equipment leased or rented from any division, subsidiary organization under common control, or business under common ownership, ordinarily will be reimbursable to the extent that they do not exceed the actual costs of ownership and operating costs determined as in "2.", above. Rental cost of equipment leased or rented from any division, subsidiary, affiliate of the Contractor under common control, or business under common ownership, that has an established practice of renting out the same or similar equipment to unaffiliated parties, shall be allowed at rates higher than

actual ownership and operating costs, provided that the Contractor furnishes the Authority adequate documentation, including the rental and usage records for the same or similar equipment items, demonstrating a reasonable likelihood that the equipment would have been rented out if not used on this Contract, and that the rental rates charged are consistent with rates charged to unaffiliated parties and going market rates. Rental costs under a sale and leaseback arrangement will be allowable only up to the amount the Contractor would be allowed if the Contractor retained title.

4. Equipment cost rates determined in "2." and "3." above shall be exclusive of labor cost of equipment operators. Such costs shall be reimbursable subject to Contractor production of auditable payroll and other records sufficient for determination of hours, pay rates, and reimbursable fringe costs as defined in Section 00700, Article 2.09 and above.

5. Except in cases of unit price or lump sum extra work orders approved by the Engineer before the work is done, actual reimbursable hours of equipment usage and operator time must be adequately documented by the Contractor's field and office records maintained during performance of the work in a manner acceptable to the Engineer. Failure of the Contractor to so maintain time records which adequately segregate added equipment hours caused by extra work required by the Engineer, or caused by other Authority actions cited in the Contractor's claim for damages, from other equipment time worked on the Contract, when maintenance of such records would have been feasible, shall constitute a cardinal omission of the Contractor, invalidating any claim for equipment cost reimbursement.

D. Payment for specialized engineering services which may be required in the performance of extra work and which is not otherwise provided for in the Contract shall be for actual costs to be incurred that comply with the standards of the Federal Acquisition Regulations, Part 31, including (a) direct labor based on hours worked on the Contract at the hourly rates paid; (b) overhead costs based on audited financial statements and other data as may be required by the Authority; (c) ten percent of the total of (a) and (b); and (d) other direct expenses related to the Contract.

1.07 PARTIAL PAYMENTS

G. Massachusetts Bay Transportation Authority-Statement of Payment to Subcontractors Form is included at the end of this Section 01150. It must be completed and signed by authorized contractor representative and submitted to the Authority with each payment request.

SECTION 01300
SUBMITTALS

1.1 DESCRIPTION

This Section specifies the general requirements and procedures for preparing and transmitting data to the Engineer for his information, acceptance, or approval. Detailed requirements for submittals are specified in applicable sections of these Standard Specifications and in the Construction Specifications.

1.2 RELATED SECTIONS

A. 01322 Construction Schedule

1.3 SUBMITTALS (SHOP DRAWINGS, WORKING DRAWINGS AND MISCELLANEOUS)

A. Definitions

1. Shop Drawings: Original drawings, submitted to the Engineer by the Contractor pursuant to the Work, including, but not limited to: stress sheets, working drawings, diagrams, illustrations, schedules, performance charts, brochures, erection plans, falsework plans, framework plans, cofferdam plans, bending diagrams for reinforcing steel, or other supplementary plans or similar data which are prepared by the Contractor or a Subcontractor, manufacturer, supplier or distributor, and which the Contractor is required to submit for review and approval by the Engineer.

2. Working Drawings: Contractor prepared plans for temporary structures and facilities. Working Drawings for elements of work which may affect safety of persons or property included but are not limited to Contractor's plans for temporary structures such as decking, temporary bulkheads, support of utilities, and for such other work as may be required for construction but which do not become an integral part of completed project.

3. Miscellaneous Submittals: Those submittals directly related to the work (non-administrative) including quality assurance program, resume of QA Managers, warranties, guarantees, maintenance agreements, maintenance of traffic plan, project photographs, survey data and reports, physical work records, quality testing and certifying reports, record and as-built drawings and data, operating and maintenance manuals, security and protection lists (including keying) and other similar information and materials not defined as shop drawings, working drawings, product data, samples mockups or sample panels.

B. Within 15 calendar days of receipt of Notice to Proceed, submit to Engineer, Schedule of all submittals required by the contract. Submit schedules for submission of shop drawings, working drawings, mock-ups, sample panels, product literature and miscellaneous submittals in that order of priority which reflects sequence of construction requirements, project schedule logistics, and include anticipated review time that may be required by Contractor and Engineer for these submissions. If complexity of submittal requires more time for review, show approximate extended number of days required. Show all submittals on progress schedules required by Sections 01321 or 01322 as appropriate. Submittal schedules shall contain the following information as a minimum:

1. Submittal number, including revisions.

2. Specification section and paragraph reference.

3. Submittal title and description

4. Date needed to support construction schedule.

5. Date sent to Engineer.

6. Date returned from Engineer.

7. Comments. Included within this section will be references to any new RFIs issued as a result, reasons for delay and any other relevant information.

C. General Procedures

Transmit submittals sufficiently in advance of construction requirements to permit a maximum of 30 calendar days for checking and appropriate action by Engineer.

Submit all work related submittals as defined in this Section and as required by Contract Documents on a Transmittal Form: Prepare draft of required transmittal form and submit it to Engineer for acceptance. At a minimum, furnish: transmittal forms sequentially numbered and show contract number, project name, date; names of subcontractors, suppliers, manufacturers, and required specification references; category and type of submittal, purpose, description, distribution record (for both transmittals and submittals) and signature of transmitter.

1. Examine and check submission for accuracy, completeness, and compliance with Contract before delivery to Engineer.

   Stamp and sign each submission with following statement: "Having checked this submission, we certify that it conforms to the requirements of the Contract in all respects, except as otherwise indicated".

   By reviewing and approving each submittal, Contractor represents that he has determined and verified materials, field measurements and field construction criteria related thereto, and has checked and coordinated information contained within such submittals with requirements of Work and Contract.

   Submit one construction material or one drawing per submittal review.

2. Maintain at site of Work a complete up-to-date, organized file of all past and current submittals including an index and locating system, which identifies the status of each submission.

   a. Assign sequential numbers to each submittal.

   b. Assign new submittal numbers to all re-submissions and cross-reference to previous submittals.

Certify shop drawings, working drawings and calculations as submitted by a professional engineer registered in the Commonwealth of Massachusetts when required by individual specification sections. Convey, or be accompanied by, information sufficient to completely explain the structures, machines, or systems described and their intended manner of use. When professional certification is required by Contract requirements, Engineer is entitled to rely upon accuracy and completeness of such calculations and certifications.

3. Engineer's Review and Action

a. The Engineer will review and approve or take other appropriate action upon Contractor's submittals only for the limited purpose of reviewing for conformance with information given and design concept expressed in Contract requirements. The Engineer's action will be taken as to cause no delay in Work or in activities of Contractor. Review of such submittals is not conducted for purpose of determining accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain responsibility of Contractor as required by Contract. Engineer's review will not constitute approval of safety precautions or, unless specifically stated by Engineer, of any construction means, methods, techniques, sequences or procedures. Engineer's review of a specific item does not indicate approval of entire assembly of which the item is a component.

b. Time required for review of submittals and resubmittals by Engineer will be a maximum of 30 calendar days, except as otherwise specified.

c. All Contractor's submittals will be stamped with one of following dispositions:

(1) NO EXCEPTIONS TAKEN: Work may proceed, provided it complies with Contract. Approval of shop drawings and samples will be general, but approval is not construed:

As relieving Contractor of responsibility for any errors or omissions, including details, dimensions, and quantity of materials; or

As approving departures from details furnished by Engineer.

(2) EXCEPTION AS NOTED: Work may proceed, provided it complies with Contract and changes shall be made by Contractor. Resubmission not required. Exception, as noted, will be general.

The above dispositions will be general, but approval or exceptions noted shall not be construed as:

- Permitting any departure from Contract requirements;
- Relieving Contractor of responsibility for any errors or omissions, including details, dimensions, and quantity of materials; or
- As approving departures from details furnished by Engineer.

(3) REVISE AND RESUBMIT: Work recognized as not being able to proceed. Revise submittal in accordance with notations thereon and resubmit without delay.

d. Handle re-submissions in the same manner as first submittals. On re-submissions, direct specific attention in writing to revisions other than the corrections on previous submissions. Make any correction required by Engineer.

e. Failure of any material to pass specified tests is sufficient cause for refusal to consider,

under this Contract, further samples of same brand or make of that material. Engineer reserves right to disapprove any material or equipment previously proven unsatisfactory in service.

f. Samples of various materials on site, stored or in place may be taken by Engineer for testing. Samples failing to meet Contract requirements will automatically void approval of items tested. Replace such materials or equipment to meet Contract requirements. When tests are required, make only one test of each sample. Samples that do not meet specified requirements will be rejected. Additional testing of samples will be made by Engineer at Contractor's expense.

D. Requirements for shop drawings.

1. Shop drawings shall include stress sheets, fabrication details, bending schedules for reinforcing steel, location and details of construction joints in concrete, catalog cuts of equipment or fixtures, wiring or piping diagrams, data sheets and performance curves for electrical, mechanical, or other equipment and any other supplementary data required by the Engineer.

2. Detail drawings for cribs, cofferdams, falsework, shoring, decking, form work, and for other temporary work and methods of construction the Contractor proposes to use, will be required to be furnished. Such drawings shall be subject to review, but details of design will be left to the Contractor who shall be responsible for the safety and successful construction of the Work. Drawings, the original design for which is the responsibility of the Contractor, shall bear the seal of a Professional Engineer registered in the Commonwealth.

3. Shop drawings shall show design, dimensions, connections, and other details necessary to insure that the Contract Documents are accurately interpreted. Shop drawings shall show proper connections with adjoining work in detail. Where adjoining work requires shop drawings, such drawing must be submitted for approval at the same time so that connections can be accurately checked.

4. Shop drawings shall establish the actual detail of all manufactured or fabricated items, indicate proper relation to adjoining work and amplify design details of mechanical and electrical equipment in the physical spaces in any structure and incorporate minor changes of design or construction details to suit actual conditions. Where separate sections or trades are involved, shop drawings shall be coordinated and where required by the Engineer shall be submitted in composite form (coordination drawings) clearly designating which trade will perform which work; the words "work by others" will not be accepted.

5. All requests for approval of materials and equipment and submissions of drawings shall indicate the corresponding number of the section and paragraph of the Specifications and reference to the Contract Drawing sheet numbers under which each of the above are required, and the Construction Performance Monitoring (CPM) activity number.

6. All shop drawings shall be thoroughly checked by the Contractor for compliance with the Contract Documents before submitting them to the Engineer for approval and shall bear the Contractor's stamp of approval certifying that they have been so checked. Shop drawings submitted without the stamp of approval and certification, or which are incomplete, contain numerous errors, have not been checked, or have been checked only superficially will be returned unchecked by the Authority for resubmission by the Contractor. The Contractor shall certify: "This shop drawing has been thoroughly checked and complies with the

Contract Documents and field measurements and the item fits with adjoining work except as noted".

7. In checking shop drawings, the Contractor shall verify all dimensions and field conditions and shall check and coordinate the shop drawings with the requirements of all other sections, adjoining materials or trades whose work is related thereto, as required for the proper and complete installation of the work.

8. Nothing in the above shall be construed to hold the Contractor liable for the design of any of the permanent structures.

E. When submitting shop drawings or working drawings for approval or review by the Engineer, the following procedures shall apply:

1. Submit to the Engineer with such promptness as to cause no delay in his work, two copies of reproducible transparencies (equal to Ozalid Sepia), and two blackline prints checked and approved by him, of all shop drawings and detail drawings required for the work.

2. The Engineer will make a prompt decision on approval of such Drawings no later than 30 days after submittal; but if such decision requires extended investigation and study, the Engineer will, within 30 days after the receipt of the submission, give the party making the submission written notice of the reason why the decisions cannot be made within the 30 day period and the date by which the decisions will be made.

3. Markings of approval, or of corrections required, will be made on the transparencies by the Engineer and record copies made by the Engineer for his own use will be at the Authority's expense.

4. If corrections are required by the Engineer, make such corrections and resubmit the drawings, again as two reproducible transparencies and two blackline prints, to the Engineer for approval. If corrections are still required, the same procedure shall be carried out until the drawings are acceptable.

5. Upon the Engineer's approval, furnish the Engineer two corrected blackline prints.

6. All items shown on shop drawings shall be clearly identified with their location in the Contract, or by the sheet or detail number in which they appear, in order to facilitate checking by the Authority.

F. Upon completion of the Work, submit to the Engineer a 35 mm microfilm of each shop drawing only, which shall become the property of the Authority. Microfilm copies shall be made on 35 millimeter black and white microfilm of archival permanent quality and mounted on aperture cards with the title of the drawing typed on the upper portion of the card.

G. Resolution and density of the developed microfilms shall meet or exceed the Requirements of the U.S. Department of Defense Specification MIL-M-9868D, and shall contain no scratches, abrasions or fog.

H. Portions of the developed microfilm, which do not meet those requirements, shall be replaced, at no expense to the Authority.

I. Contract prices shall include the cost of furnishing all shop and detail drawings as specified and microfilms.

J. Progress Photographs - Progress photographs are required to be taken by the Contractor. Ten 8x10-inch color photographs (including slides of these photographs) of progress and construction operations shall be required each month.

1.4 QUALITY CONTROL

A. SAMPLES AND TESTS

1. Inspection and sampling of materials will be carried out, ordinarily at the source or at the site of the Contract Work in accordance with established policies and procedures of the Authority, but the Authority will not assume any obligation for the inspection and sampling of materials at the source. Responsibility for incorporating satisfactory material in the Work rests entirely with the Contractor.

2. Furnish to the Engineer samples specified in the various specification sections. Prepay shipping charges on samples. Materials or equipment for which samples are required shall not be used in the Work until approved in writing by the Engineer.

3. Unless otherwise indicated, submit not less than two identical samples of each type required. Label each sample indicating:

   - Name of project and contract number;
   - Name of contractor and subcontractor;
   - Material or equipment represented;
   - Source;
   - Name of producer and brand (if any);
   - Specification section, article, and paragraph; and
   - Location in project.

4. Mail, under separate cover, a letter in triplicate submitting each shipment of samples and containing the information required in Article 1.04C of this Section. Enclose a copy of the submittal letter with the shipment and a copy to the Engineer. Approval of a sample shall be only for the characteristics and use named in the submittal and approval, and will not be construed to change or modify any Contract requirement. Before submitting samples, the Contractor shall assure himself that the materials or equipment will be available in the quantities required in the Contract, as no change nor substitution will be permitted after a sample has been approved unless approved by the Engineer in writing.

5. Approved samples not damaged in testing may be incorporated in the finished work if marked for identification and approved by the Engineer. Materials incorporated in the Work shall match the approved samples.

6. Failure of any material to pass the specified tests will be sufficient cause for refusal to consider, under the Contract, any further samples of the same brand, make, or source of that material. The Engineer reserves the right to disapprove any material which has previously proven unsatisfactory in service.

7. Samples of various materials or equipment delivered on the site or in place may be taken by the Engineer for testing. Failure of samples to meet Contract requirements will automatically void previous approvals of the item tested.

8. As soon as possible and a minimum of 35 days in advance of the time when placing of bituminous or Portland cement concrete is expected to begin, deliver to the Authority Laboratory samples and available analysis of concrete ingredients. Quantities of materials, aggregate sizes, cement, admixtures, and bitumens as may be required for the performance of necessary tests and trial mixes will be determined by the Authority's Materials Testing Engineer.

1.5 REQUESTS FOR INFORMATION

A. Upon discovery of the need for interpretation of the Contract Documents, the Contractor shall prepare and submit a Request for Information (RFI) on the form specified at the end of this Section. RFIs shall not be used to request approval of submittals, request approval of design changes or substitutions, nonconforming conditions, or requests for changes to Contract schedule and/or Quantities

1. RFIs shall be issued by the Contractor to the Engineer. RFIs submitted by entities other than the Contractor will be returned with no response.
2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in the work.

B. Content of the RFI: Include a detailed, legible description of item needing interpretation and the following:

1. Project Name
2. Contract Number
3. Date.
4. Name of Contractor.
5. RFI Number, numbered sequentially.
6. Specification Section number and title and related paragraphs, as appropriate.
7. Drawing number and detail references, as appropriate.
8. Field dimensions and conditions, as appropriate.
9. Contractor's suggested solution(s). If Contractor's solution(s) impact the Contract Completion Date or Quantities, Contrator shall state the impact in the RFI.
10. Contractor's signature.
11. Attachments: Include drawings, descriptions, measurements, photos, Product Data, Shop Drawings, and other information necessary to fully describe item needing interpretation.

C. RFI Log: Prepare, maintain and submit a log of RFIs organized by the RFI number containing the following information:

1. Project Name
2. Project Contract Number
3. Name of Contractor
4. RFI number and Revision Indicator

5. RFI Description
6. Date RFI was submitted
7. Date Response Required
8. Date Response Received.
9. Date Closed

D. Engineer's Action: Engineer will review each RFI, determine action required and return to the Contractor within 30 days. Any change to the Contract Completion Date or Quantities may result in a change being submitted under Article 2 – Scope of Work of Section 0700 of the General Conditions.

1.6 GENERAL

No separate measurement or payment will be made for work required under this Section. All costs in connection therewith will be considered incidental to the item of Work to which they pertain.

END OF SECTION

MBTA Request For Information

RFI No.

CONTRACTOR: **CONTRACT NO.**

AFFECTED DOCUMENT(S): **SPEC:** _____

DWG(S): _____ **OTHER** _____

DESCRIPTION:

JUSTIFICATION:

SIGNATURE:	**DATE:** / /

RESPONSE:

DESIGNER:	**DATE:** / /
MBTA PROJECT MGR:	**DATE:** / /

SECTION 01322

CONSTRUCTION SCHEDULE

1.01 DESCRIPTION

This section specifies the general requirements and procedures for preparing and submitting Contract Schedules to the Authority for review and acceptance. Detailed requirements for submittals are specified in applicable sections of these Standard Specifications and/or as modified in the Construction Specifications.

1.02 SCHEDULE GLOSSARY

A. The following terms used in this Section or elsewhere in the Contract Documents shall have these meanings:

Activity - An element in the Progress Schedule highlighting or depicting a part of the Work and establishing the time and resources required, for completing that part of the Work.

As-Planned Schedule - Construction Schedule Revision 0 (Rev. 0) Submittal returned by the Authority to the Contractor as "Resubmittal Not Required," with or without comments or objections noted, showing the contractor's plan to complete the work within the Contract Time.

Business Day - Any day except Saturdays, Sundays and legal holidays observed by the Authority. Also termed Work Days.

Days - Refer to Section 00700, Article 1 of the General Conditions.

Contract Float - Number of Business Days between the Contractor's anticipated date for early completion of all or part of the work and the corresponding Contract Time or Contract Milestone(s). Contract Float is further defined as the amount of time any given activity or path of activities may be delayed before it will affect the Contract Time.

Critical Path - Any continuous sequence of Activities in the Progress Schedule that control achievement of a corresponding Contract Time or Milestone(s).

CPM - The Critical Path Method of planning and scheduling. References to the Critical Path Method (CPM) shall be to CPM construction industry standards that are consistent with this Section 01322.

Construction Schedule - Schedule which shows the Contractor's approach to planning, scheduling, and execution of the work. Includes the Revision 0 and monthly Progress Schedule Submittal(s).

Date for Commencement of Contract Time - The date when the Contract Time starts as defined by Article 6.02 A.

Delays - Slippage of the Early Dates in any Progress Schedule Submittal which forecast any slippage or overrun of Milestone(s) or Contract Times

Early Completion Schedule - An early completion CPM schedule is one which anticipates completion of all or specified parts of the Work ahead of the corresponding Contract Time.

Early and Late Dates - Early times and late times of performance for the Activities as defined by CPM techniques and as further limited by the requirements of the General Conditions.

Milestone - A key point of progress (zero duration) established in the Construction Schedule, and as specified in the Contract Documents under Article 6.02.

Progress Schedule Submittal - A monthly status report of the As-Planned Schedule (Rev. 0) intended to aid in and facilitate the evaluation of a Partial Payment. Submittal to reflect Delays, schedule recovery plans and all other Contractor-initiated schedule revisions, subject to the acceptance by the Authority.

B. Other terms used in this Section shall have the meanings assigned to them elsewhere in the Contract Documents, and if not assigned and where the context will permit, as used or defined in Massachusetts General Laws (M.G.L.).

1.03 CONSTRUCTION SCHEDULE REQUIREMENTS

A. The Contractor's approach to prosecution of the Work shall be disclosed to the Authority by submission of the computerized, Construction Schedule required in this Section. These requirements are in addition to, and not in limitation of, requirements imposed in other sections.

B. The Construction Schedule shall consist of (a) the Construction Schedule Revision 0 (Rev. 0) Submittal (As-Planned Schedule), and (b) monthly Progress Schedule Submittals. The Construction Schedule shall clearly define the prosecution of the Work from the Date of Commencement of Contract Time to substantial completion by using separate CPM activities for, but not limited to: construction; testing; permitting; submittal preparation, reviews, resubmissions and approval; material and equipment deliveries; Authority furnished items; interfaces with other contractors, Public Utilities, etc.; Final Inspection; Punch List; Milestones and Substantial Completion; Authority training; and move-in. CPM Activities and logic ties shall be detailed as necessary to show the Contractor's Work sequencing and separately define all requisite Authority tasks.

C. In preparing the Construction Schedule Submittals, the Contractor has the responsibility to request clarification from the Authority on any areas of the schedule which reflect the Contractor's interpretations of, or variations from, the requirements of the Contract Documents. The Contractor also has the responsibility to incorporate the Subcontractors and Suppliers input into the schedule for Activities, logic ties, restraint dates, etc. involving their Work.

D. Contractor is herein notified that the Contract work will be monitored by civil and public city and agency groups and that the Contractor should make provisions in their bid for meeting and working with these groups as the progress of the work demands or twice a month, whichever is greater. Contractor's attendance will be mandatory at all meetings.

E. Acceptance of the Construction Schedule by the Authority shall not relieve the Contractor from compliance with the requirements of the Contract Documents, or result in the approval of any variation from the Contract Documents.

F. The current version of Primavera Project Planner□, SureTrak□ or equivalent schedule software shall be used for the Construction Schedule. Equivalent software shall run on IBM PC compatible equipment, capable of processing and plotting the Progress Schedule information required in this Section, and create data base files accessible by Windows based software. The Contractor shall inform the Authority of the Construction Schedule software the Contractor will use to comply with the requirements of this Section. If the Contractor selects scheduling software other than Primavera Project Planner® or SureTrak®, the Contractor, at no increase in Contract Price, shall (a) demonstrate the software is

capable of processing and producing the Construction Schedule information required in this Section and creating data base files accessible by other software, on IBM PC compatible equipment (b) furnish required licensed copy(s) to the Authority, (c) provide the Authority with sufficient software training at the site, and (d) furnish to the Authority all upgrades and updates acquired from the software vendor during the period allowed for completion of the Work which are used by the Contractor on the Work

G. The Contractor will submit as part of the Rev. 0 and monthly Progress Schedule Submittal(s) a 3-1/2" floppy diskette containing the complete Construction Schedule data files in compliance with the requirements of this Section.

H. Contractor agrees to and guarantees that the Contractor will not:

1. Misrepresent to the Authority it's scheduling or execution of the Work.

2. Utilize schedules substantially different from those submitted to the Authority or any Subcontractor for performance or coordination of the Work, or are not practical.

3. Submit schedules that do not accurately reflect the intent or reasonable expectations of the Contractor and its Subcontractors.

Contractor's failure to substantially comply with this agreement shall be a substantial and material breach of contract. In the event the Contractor fails, refuses or neglects to comply to a significant extent with the requirements of this Section 01322, the Authority may elect any of the following: (a) nullify any mobilization payments previously made, (b) stop payments under the monthly Partial Payment Request Progress Schedule *pay item*, (c) prepare alternate progress schedules, as may be suitable under the circumstances, and deduct from the Contract Price all related costs by Change Order, (d) entitle the Authority to the damages afforded for misrepresentation or fraud by these Contract Documents or applicable law. Continued failure of the Contractor to perform in accordance with the requirements of this Section 01322 will be reason to place the Contractor in default of his obligation there under and terminate the Contract.

1.04 USE OF FLOAT

A. Contract Float is not for the exclusive use or benefit of either the Authority or the Contractor, but must be used in the best interest of completing the project within the Contract Time. If the Early Dates in any Progress Schedule Submittal forecast any slippage or overrun of the Contract Times, the Contractor shall indicate such slippage or overrun by reporting negative Contract Float.

B. The Contractor shall not utilize (1) float suppression techniques in the Construction Schedule, including but not limited to interim dates imposed by the Contractor other than Contract Time(s) and Contract Milestone(s), or (2) the inclusion of activities or constraints in a path or chain leading to a Contract Milestone which are unrelated to the Work as stated and specified in the Contract Documents, or (3) activity durations or sequences deemed by the Authority to be unreasonable in whole or in part.

C. All Contract Time(s) and Milestones shall be imposed, coded and separately identified in all Progress Schedule Submittals in conformance with the Milestone(s) and Contract Time(s) set forth in the Contract Documents. The Contractor shall impose no other date restraints in the Construction Schedule, unless an explanation of their bases is provided and is acceptable to the Authority. Contract Completion and Milestones incorporated in the Contractor's Construction Schedule shall be assigned duration of zero (0) days.

D. Contract Float in an early completion Revision 0 Submittal or Progress Schedule Submittal shall be calculated based on the definitions given in the Contract, regardless of the float values shown in any Construction Schedule Revision Submittal or Progress Schedule Submittal.

E. Extensions of time for performance of the Work required under the General Conditions pertaining to equitable time adjustment will be granted only to the extent that the equitable time adjustment for activities affected by any condition or event which entitles the Contractor to a time extension, exceed the Contract Float along the path of the activities affected at the time of Notice to Proceed of a Contract Modification or commencement of any delay or condition for which an adjustment is warranted under the Contract Documents.

F. If the Contractor is delayed in performing the Work, the Contractor shall absorb any related delay, disruption, interference, hindrance, extension or acceleration costs, however caused, until all Contract Float, if any, is consumed and performance or completion of the Work, or specified part, necessarily extends beyond the corresponding Contract Times.

1.05 ACTIVITY REQUIREMENTS

A. Activity durations shall equate to the Business Days required to complete the Work included in each Activity. Activities shall be in sufficient detail to separate items of Unit Price Work from lump sum Work, breakout distinct classes of Work (e.g., CSI Divisions/Sections or equivalent) and Work in separate areas or locations, as specified by the Authority. Work being performed by DBE firms shall be identified as separate CPM activities.

B. Installation Activities shall last from ten (10) to thirty (30) Business Days, unless shorter durations result from the rules in paragraph 1.05.A. Submittal Review Activities shall be thirty (30) Business Days, unless different review times are specified in other sections of the Contract Documents.

C. Activities shall be assigned consistent descriptions, identification codes and sort codes. Sort code schemes shall: (a) be subject to the Authority's prior consent; (b) group Activities using meaningful schemes defined by Contractor and the Authority; and (c) designate lead responsibility for each Activity.

1.06 SCHEDULES; REPORTS; PLOTS; NARRATIVES

A. Activity Reports shall include Activity identification code, description, duration, calendar, Early Dates and Late Dates, Total Float and sort codes as specified by the Authority. The Late Finish Date of any Activity representing a Milestone shall equal the corresponding Contract Time. In addition, Activity reports shall show, for each Activity, all preceding and succeeding logic ties (lead/lag and lead times) or attach a separate report combining such Activity and logic tie data.

B. Each Look-Ahead Schedule shall display the activities planned at the closing (i.e., data, cut-off) date that cover the previous two (2) weeks and the next four (4) weeks.

C. Each Narrative shall list the Activities on each Critical Path and compare Early Dates and Late Dates for Activities designating Contract Times.

1. A Rev. 0 narrative shall be included which details (a) the Contractor's site management plan (e.g., lay down, staging, traffic, parking, etc.), (b) the use of construction equipment and resources, (c) basis and assumptions for critical activity durations and logic, (d) compliance

with winter weather requirements, and (e) any shifts, non-Business Days and multiple calendars applied to the Activities.

2. For each Progress Schedule Submittal, the narrative also shall recap progress and days gained or lost versus the previous Progress Schedule, describe changes in resources to be used on remaining Work and identify Delays, their extent and causes. For Progress Schedule Submittals, each narrative also shall itemize changes in Activities and logic ties caused by each Change Order, schedule recovery plans and grouping of related Contractor-initiated revisions.

D. Each narrative shall certify that the Contractor has not been delayed, as of the closing date, by any act, error or omission of the Authority, except as otherwise specifically stated in the narrative or identified in a claim submitted in accordance with the General Conditions of the Contract. Any determination by the Authority will be binding on the Contractor if the Contractor fails to do so.

1.07 CONSTRUCTION SCHEDULE REVISION 0 SUBMITTAL

A. The *initial* Revision 0 Submittal shall be due within ten (10) Days after receipt of the Commencement of Contract Time, and shall include at least the first three (3) months of the forthcoming complete Rev. 0 Submittal.

B. The *complete* Rev. 0 Submittal shall be due with the first partial payment. The Construction Schedule Rev. 0 Submittal shall reflect the Work as awarded and shall purposely exclude any Delays, Change Orders, □or equal□ materials and equipment and substitutions of any kind.

C. Each Revision 0 Submittal shall include an electronic computer disk with the Contractor's schedule data files (including activity data, logic, coding), a narrative and four (4) copies of the specified Activity Reports and Look Ahead Schedule as defined in paragraph 1.05, all in formats, sorts and sequences acceptable to the Authority.

D. Once the Rev. 0 Submittal (or Rev. 0A, or Rev. 0B, etc. for a resubmission) is returned to the Contractor as "Resubmittal Not Required," with or without comments or objections noted, it shall become the *As-Planned* Schedule. Once established, the *As-Planned* Schedule shall be used as the basis for Progress Schedule Submittals.

E. The first partial payment shall be not be made until the Authority returns to the Contractor the Initial Rev. 0 Submittal as "Resubmittal Not Required." The second partial payment shall not be made until the Authority returns to the Contractor the *complete* Rev. 0 Submittal as "Resubmittal Not Required".

F. In the event the Authority is unable to accept the complete Rev. 0 Submittal and the *As-Planned* Schedule is not established, the Contractor shall submit *unapproved* Progress Schedule Submittals as specified by the Authority, each reflecting the Contractor's approach to completion of Work remaining, progress of the Work and schedule issues in dispute

G. The Construction Schedule shall incorporate the Contractor's best estimate of the Activities and logic ties required to perform items covered by allowances within the limits of the Contract Times.

1.08 PROGRESS SCHEDULE

A PROGRESS SCHEDULE SUBMITTAL

1. Progress Schedule Submittals statusing the *As-Planned* Schedule Submittal shall be due with each partial payment request, starting with the third request and with each subsequent monthly partial payment request. The Progress Schedule Submittal is a prerequisite to processing the Partial Payment Request.

2. Each required Progress Schedule Submittal shall include an electronic computer disk with the Contractor's schedule data files (including activity data, logic, and coding), a narrative and four (4) copies of the reports and schedules defined in paragraph 1.06, all in formats, sorts and sequences acceptable to the Authority.

3. The Contractor shall uniquely identify each Progress Schedule Submittal by using a numbering convention similar to that used on technical Submittals. Resubmissions shall be assigned the corresponding Submittal number and the letter A, or B, or C, etc., and shall fully address all the Authority's review comments and objections on the previous Submittal.

4. Progress Schedules Submittals shall reflect progress up to the closing (i.e., data, cut-off) date, forecasted finish for in-progress Activities and re-forecasted Early Dates for Activities planned in the next update period. The current Progress Schedule Submittal should incorporate all proposed Activity, logic and restraint date revisions required to (a) implement changes in the Work, (b) detail all impacts on pre-existing Activities, sequences and restraint dates, (c) recover schedule, (d) reflect the Contractor's current approach for Work remaining, (e) incorporate any Delays that are being negotiated between the Authority and Contractor, and (f) reflect "or equal" or substitution proposals. Progress up to the closing date shall be limited to changes in logic ties and as-built dates for completed and in progress Activities. As-built data shall include actual start dates (excluding premature starts), remaining durations, actual finish dates (when dependent Work could/did proceed), Delays and other events significant to the Progress Schedule that occurred since the previous Progress Schedule Submittal. Any revisions for the Contractor's convenience shall be excluded when reconciling an extension to a Milestone or Contract Time.

5. Once the Progress Schedule Submittal is returned by the Authority as "Resubmittal Not Required," it shall be used by the Contractor as the basis for next Progress Schedule Submittal. If the Authority is unable to accept any Progress Schedule Submittal, the Contractor shall submit *unapproved* Progress Schedule Submittals as specified by the Authority, each reflecting the Contractor's approach to completion of Work remaining, progress of the Work and schedule issues in dispute

6. The Authority and Contractor shall employ the accepted Progress Schedule, subject to the Contractor's position on the Authority objections to outstanding schedule issues, to monitor progress against the Contract Time(s), evaluate the effect of Delays on Contract Time and Contract Price and support the justification for any assessment of liquidated damages.

7. In the event the evolution of the Progress Schedule is interrupted, paragraph 1.08 B.3 provides Delay evaluation and Progress Schedule update procedures which shall be binding on both the Authority and Contractor.

B. DELAY PROVISIONS

1. Review with the Authority progress of work bi-weekly. Unless otherwise directed in writing by the Authority, whenever this review, as determined by the Authority indicates a late completion of the work, or should activities shown on the Progress Schedule Submittal slip by ten (10) or more Days beyond any Contract Time or Milestones, the Contractor shall be required to, at no

extra cost to the Authority, prepare and submit a recovery schedule which displays how the Contractor intends to reschedule those activities, in order to regain compliance with the Contract Time or Milestones. The Contractor will also submit a narrative, which shall describe the cause of schedule slippage and actions taken to recover schedule within the shortest reasonable time (e.g., hiring of additional labor, use of additional construction equipment, expediting of deliveries, etc.).

2. Schedule recovery will be excused if the Contractor requests and demonstrates entitlement to an extension in Contract Time, in writing, due to delay(s) not within the control of the Contractor, and the Authority concurs schedule recovery is not required at that time. Any Contractor request for adjustment in Contract Time and Contract Price will not be evaluated unless (a) the Contractor, using the procedures in this Section and the Contract, shows that conditions justifying adjustments in Contract Time and/or Contract Price have arisen, and (b) the Contractor's analysis is verifiable through an independent review by the Authority of the electronic disk files for the Progress Schedule Submittal provided by the Contractor.

3. In the event the Authority is unable to return any Progress Schedule Submittal as "Resubmittal Not Required," and the effect of Delays on Contract Time and Contract Price need evaluation, both the Authority and Contractor shall employ the *As-Planned* Schedule and not any *unapproved* Progress Schedule Submittal for such evaluations. The procedure for updating the *As-Planned* Schedule and including Activity, logic tie and restraint date revisions is specified in paragraphs 1.08 B.3.A and 1.08 B.3.B, respectively.

   a. The Contractor will provide a separate electronic disk file of the *As-Planned* Schedule statused for all activities in progress or completed through the time periods for each delay issue or significant project events. Each updated schedule will be compared and analyzed, identifying any slippage between the actual dates for any impacted or delayed activities and the *As-Planned* Schedule. This schedule slippage can then be correlated to the Delay Issues that occurred between two (2) schedule update periods. For each update window schedule submitted, revisions in Activities, logic ties and restraint dates affecting Work after that update window shall be included only if they are identified and jointly agreed to be incorporated by the Contractor and the Authority.

4. Determination and extension of Contract Time will be in accordance with Article .08. Contractor acknowledges and agrees that the actual delays in activities which, according to the Progress Schedule Submittal, do not affect any Contract Time or Milestone shown by the critical path in the network, do not have any affect on the Contract Time or Milestone and therefore will not be the basis for a change therein.

5. The Contractor's failure, refusal or neglect to comply with the requirements specified in Section 01322 Article 1.08 B.1 shall be reasonable evidence that the Contractor is not prosecuting the Work with due diligence. If faced with such situation, the Authority may (a) demand adequate, written assurance of due performance, as required in Section 00700 Article 6.09 (b) direct alternate schedule recovery actions. If in the judgment of the Authority it appears that the Contractor cannot complete his Work within the scheduled time, then the Contractor shall work overtime, additional shifts or adopt such other procedures as may be necessary to restore adherence to the schedule. The full cost of any such recovery work efforts shall be borne by the Contractor, and/or (c) withhold liquidated damages, as provided in Article 6.09.

1.09 MEASUREMENT AND PAYMENT

A. MEASUREMENT

1. A fixed price not to exceed $ 3,000.00 will be made to reimburse the contractor for CPM Scheduling. Payment will be made under Item No. 0110.002, CPM Scheduling, to the Contractor.

B. PAYMENT

1. Fifteen percent (15%) of the fixed price for CPM Scheduling will be made upon return to the Contractor of the CPM Construction Plan Rev.0 Submittal as "Resubmittal Not Required" (As-Planned Schedule).

2. The remaining 85% will be pro-rated in equal amounts on each subsequent application for payment upon the Authority's receipt and approval of the monthly CPM updates. The number of months to be used for the pro-rating will be the number of months estimated to complete the work as defined under Article 6.02 - Prosecution of Work. The final month pro-rated amount will not be made until the final application for payment.

3. All payments are subject to retainage.

C. PAYMENT ITEM

Item No	Description	Unit
0110.002	CPM SCHEDULING	FP

END OF SECTION

SECTION 01331

CHAMP MANAGEMENT SYSTEM REQUIREMENTS

1.01 DESCRIPTION

A. This section specifies CHAMP, a software application that is specifically designed to monitor conformity with State and Federal affirmative action and Disadvantaged Business Enterprise (DBE) laws and regulations (see Appendices No.1, 2, and 3) The Authority expects this software to support the administration of Executive Order 11246, 390 and Bill 2142, EEO Requirements and Disadvantaged Business Enterprise Utilization Requirements more efficiently and effectively than typical manual methods. The use of CHAMP will eliminate the need for manual production of weekly workhour reports, DBE Payment forms and annual contractor workforce reports.

1.02 EQUIPMENT

A. The specified management system is comprised of software products marketed under the trademark CHAMP by Washington and Rice, LLC, 27629 Chagrin Blvd., Suite 201, Woodmere, Ohio, 44122, 216-591-9130. The contractor shall obtain this software from Washington and Rice, LLC.

1.03 DETAILS

A. The contractor shall import text files of CHAMP compatible payroll data into the CHAMP software. The contractor and all approved subcontractors shall create these payroll files via an export from their computerized company payroll systems and/or manual data entry. After award of the contract and prior to notice to proceed, the contractor shall, if necessary, purchase CHAMP software and arrange for technical support and training from the indicated sources as follows.

1. Washington and Rice LLC.

2. The Contractor shall purchase one copy of the CHAMP Contractor Module (CM) to support the contractor's import of contractor and subcontractor payroll data, compliance monitoring and creation of required CHAMP reports.

3. The Contractor shall purchase a copy (ies) of the CHAMP Subcontractor Module(SM) to support manual entry of payroll data by its subcontractor (s) in instances where a subcontractor (s) does not own CHAMP and cannot create compatible import files from their company payroll system.

4. The Contractor shall obtain file specifications for the payroll import file.

5. The Contractor shall obtain technical advice and assistance regarding software, installation and operation.

6. The Contractor shall obtain CHAMP training from an Authority approved vendor.

1.04 BASIS OF ACCEPTABILITY:

A. For the duration of the contract, the contractor shall. :The Contractor shall keep the CHAMP Software updated with contractor and subcontractor data:

B. The Contractor shall provide a diskette containing the exported contract file and hard copies of required reports in accordance with established submittal procedures, and:

C. The Contractor shall install vendors issued upgrades and maintain the software to ensure data submissions are made using the most recent version of the software.

D. The contractor shall bear all costs associated with the purchase of all hardware, software and training associated with the CHAMP Management Program.

E. The contractor or its subcontractors shall not re-sell any module of the CHAMP Management Program.

1.05 SYSTEM FEATURES

A. Champ-CM provides the following features:

1. Work Force Utilization

a. Establish goals for project by race, gender, and craft
b. Automatic assignment of work force hours to projects
c. Import work hours capability
d. Graphic display of work hours actual versus goals

2. On-Job-Training (OJT)

a. Establishes OJT Plan for projects
b. Track Hours for Apprentices and trainees
c. Presents OJT graphic information

3. DBE Monitoring

a. Establishes DBE goals for project
b. Tracks payments to Prime & DBE's.

4. Reporting

a. Generates monthly utilization reports
b. Generates form 1391
c. Work Force information
d. DBE summary
e. Work Force listings.

1.06 MINIMUM SYSTEM REQUIREMENTS

A. Computer and related components
1. A 486DX computer or higher

2. 8 Megabytes or more of memory
3. 128 Cache memory
4. 1 megabyte VRAM
5. PC-DOS or MS-DOS version 3.3 or higher
6. Microsoft Windows 3.1or higher
7. A 3.5" high density disk drove
8. 25 MB hard disk space for the deployment DLLs, Database, BD files, ODBC and EXE
9. VGA display
10. Windows supported mouse

1.07 MEASUREMENT AND PAYMENT

A. No separate measurement or payment will be made for work required under this Section. All costs in connection therewith will be considered incidental to the item of work to which they pertain.

END OF SECTION

SECTION 01400

QUALITY ASSURANCE

PART 1 - GENERAL

1.1 DESCRIPTION

A. This Section specifies the general requirements for quality assurance and quality control including source of supply and quality of materials, acceptance testing by the Engineer, control testing by the Contractor, off-site inspection, inspection and use of local materials, inspection of proportioning plants and coordination of finishes.

B. Quality Assurance Program: The Contractor is responsible for controlling the quality of Work including work of its Subcontractors and suppliers and for assuring that the specified quality is achieved. The Contractor, Subcontractors and suppliers shall establish, maintain and implement a written Quality Assurance Program meeting the requirements of U. S. Department of Transportation Quality Assurance and Quality Control Guidelines (FTA-MA-06-0189-92-1). The Program shall be tailored to the scope and complexity of the Work and shall include implementing procedures and inspection forms equal to those included at the end of this Section. Subcontractors or suppliers may use the Contractor Quality Assurance Program in lieu of developing their own.

C. The overall administration of the Quality Program shall be vested in a responsible section of the Contractor's organization. This section shall contain a QC Organization headed by an on-site QC Manager who has clear access to top-level management and to Subcontractors' officers responsible for the execution of the Subcontractor's QC Program. The QC Manager's sole duty is to manage and administer the QC Program unless otherwise authorized in writing by the Engineer. Such authorization can be withdrawn at any time. The QC Manager shall have at least five (5) years experience in quality control inspection on construction projects.

D. The QC Organization shall be staffed by technically competent personnel with freedom to make decisions without pressure or bias and shall have sufficient authority to ensure that quality requirements are consistently maintained.

1.2 SUBMITTALS

A. The Contractor shall submit within three weeks of the notice to proceed the Quality Assurance Program to be used on the project by the Contractor and Subcontractors. The resume of the Contractor's Quality Control Manager shall be included with the submittal. Changes to the Quality Assurance Program shall be submitted for approval prior to implementing the changes.

B. The Contractor shall submit the name, address, and qualifications, together with the scope of proposed services, of proposed inspection or testing firms to the Engineer for approval at least 30 days prior to the scheduled commencement of any work involving such inspection or testing

C. Test Reports - Within five days after completion of testing performed by or for the Contractor, submit test results to the Engineer. The Contractor shall identify the test reports to be submitted as required in Section 01300. Test reports shall be identified with the information specified for samples in Section 01300 and additionally, the name and address of the organization performing the test, the date of the tests and a signature of an authorized representative attesting to the validity of the test results.

1.3 DELIVERY, STORAGE, AND HANDLING (Not Applicable)

1.4 QUALITY ASSURANCE

A. Source of Supply and Quality

1. If the Engineer so desires, materials will be approved at the source of supply before delivery.

2. Unless otherwise stipulated the Contractor shall furnish all materials required for the Work specified in the Contract, and said materials shall meet the requirements of the Specifications for the kind of Work involving their use.

3. Unless otherwise provided, only new and first quality materials conforming to the requirements of the Specifications and approved by the Engineer shall be used in the work, except for material used by the Contractor for his convenience and which is not to be permanently incorporated in the work.

4. After testing if the sources of supply that have been approved do not furnish a uniform product or if the product from such sources proves unacceptable at any time, the Contractor shall, at no additional expense to the Authority, take any and all steps necessary to furnish acceptable materials.

5. Materials such as crushed stone, gravel borrow, or ordinary borrow, shall be sampled at the source and, if satisfactory, given preliminary approval for use. Samples shall be taken by or in the presence of the Engineer. The Contractor shall furnish such facilities as the Engineer may require for collecting and forwarding samples to the Authority Laboratory. Samples shall be furnished without charge and with any shipping charges prepaid. However, preliminary approval by the Engineer does not relieve the Contractor of the responsibility for placing satisfactory material in the Work as determined by subsequent samples taken at the source or on the Contractor site, prior to the material being incorporated into the Work and if the Contract site samples test satisfactorily the material will be considered to meet the Contract requirements as to quality. If such sampling and testing reveal that the material is unsatisfactory it shall be removed from the Work or blended in with such other materials so that an acceptable material will be produced. Removal and blending of such material shall be done by the Contractor without additional compensation.

B. Rights of Access

The Engineer may make visits at the proportioning plant or source of supply to audit or inspect the production of material, or the manufacture of products. These visits, however, will not be undertaken until the Engineer is assured of the cooperation and assistance of both the Contractor and the material producer or manufacturer. The Contractor shall assure that "Rights of Access" clauses are contained in the purchase document with the producers of materials or manufacturers of products allowing the Engineer, or an authorized representative, to have free entry at all times to such parts of the off-site plant concerned with the manufacture or production of the materials. Adequate work facilities at the off-site plant, shall be furnished free of charge to the Authority for its use during audits or inspections. The Engineer assumes no obligation to inspect materials at the source of supply. The responsibility of incorporating satisfactory materials in the Work rests entirely with the Contractor, notwithstanding any prior inspections or tests.

C. Acceptance Testing

1. Acceptance testing is the testing of materials and workmanship by the Engineer for acceptance of the completed Work. The Engineer will perform acceptance testing of materials and workmanship in accordance with the Contract Documents and reserves the right to perform additional testing at any time to determine conformance with the Contract requirements.

2. Acceptance testing by the Engineer is not to be considered a replacement for control testing conducted by the Contractor or a manufacturer producing materials for the Contract. Acceptance testing will be at the expense of the Authority.

D. Hold and Notification Points

The Contractor will be required to notify the Engineer when certain activities will be performed. These notifications and time requirements will be detailed in the various sections of the Specification. There will be two types of notifications as follows:

Hold Point - A point in a function or process in which the Engineer performs a planned inspection and beyond which work may not proceed without prior approval from the Engineer.

Notification Point - A point in a function or process in which the Engineer may perform an inspection. The Engineer must be notified at this point and work may proceed.

Failure to provide sufficient notice to the Engineer or violating a "Hold Point" may result in the subsequent rejection of the work. Any correction of the work will be at the expense of the Contractor.

E. Control Inspection and Testing

1. Control inspection and testing are the testing or inspection of materials prior to their delivery from a manufacturer, or during construction. Examples of such testing are soils tests before and after compaction, concrete tests during placement, except for concrete strength tests that the Engineer will perform, and other tests and inspections specified in the various sections of the Specifications to ensure compliance with Contract requirements. The Contractor shall assume full responsibility for control inspection and testing and give sufficient notice to the Engineer to permit the witnessing of the inspections or tests. Control inspection and testing shall be at the expense of the Contractor and may be performed by independent firms.

2. Notification Point - The QC Manager shall make periodic site inspections of the work areas with the construction supervisors to assure that there are no conditions that would affect the quality of the installation or product. Deficient areas shall be identified, causes identified and deficient conditions corrected. Inspections shall be documented on the "General Inspection Form" contained at the end of this Section. The Contractor shall notify the Engineer in advance of the periodic inspections to allow participation by the Authority.

F. Coordination of Finishes

1. Within a reasonable time after Award of Contract, and unless otherwise included in the Contract Drawings the Engineer will provide a color coordination schedule designating colors and textures of finish materials in areas where required.

2. It is the intent of the Contract Documents to produce harmony of matching finish, texture, and color throughout various components of the Project.

3. Work coordination of like materials to achieve the above-mentioned intent is required by submitting to the Engineer for approval pilot samples of acceptable ranges of color variation and of finish textures. Coordination is especially required for concrete surfaces: metals including anodized aluminum; glass; sealants; hardware; floor, wall and ceiling coverings; painted surfaces; equipment items; and paving of dry nature.

4. Upon obtaining the Engineer's acceptance of any range of colors and textures, furnish the Engineer with one record set of samples, or more if required, and keep sufficient sets for use in coordinating conformity with this record set.

PART 2 – PRODUCTS (Reserved)

PART 3 – EXECUTION (Reserved)

PART 4 - MEASUREMENT AND PAYMENT

No separate measurement or payment will be made for work required under this Section. All costs in connection therewith will be considered incidental to the item or items of work to which they pertain.

HIGH STRENGTH BOLTING CHECKLIST
ROTATIONAL CAPACITY TEST

DATE: _____

DATE OF TEST _____ CONTRACTOR _____

CONTRACT NO. _____ PAY ACTIVITY _____

SUBMITTAL _____ TEST NO. _____

ITEM TESTED

SIZE AND DESCRIPTION	MFG.	MARKING	LOT NO.	FINISH
BOLT				
NUT				
WASHER				

ROTATIONAL CAPACITY LOT NUMBER:

TEST RESULTS

	RESULT TEST 1	RESULT TEST 2	PASS		FAIL	
MINIMUM TENSION REQUIRED						
TORQUE AT MINIMUM TENSION						
TENSION AFTER FULL ROTATION						

COMPUTED TORQUE VALUE: _____

TEST WAS CONDUCTED USING: ☐ SKIDMORE SERIAL NO.:_____ CAL. DATE:_____
☐ SOLID PLATE

TORQUE WRENCH USED: SERIAL NO.: _____ CALIBRATION DATE:_____

DEGREE OF ROTATION:
REMARKS: _____

☐ **RCL TEST SHEETS FOR ALTERNATE DESIGNED FASTENER WILL BE FURNISHED UPON REQUEST**

CONTRACTOR REPRESENTATIVE DATE MBTA DATE

CONCRETE PLACEMENT CARD

DATE: CONTRACTOR: CONTRACT NO.

CONCRETE PLACEMENT NO: SCHEDULED PLACEMENT DATE:

STRUCTURE ELEVATION: FROM TO

ACTUAL PLACEMENT DATE: TIME: START: FINISH:

TYPE MIX: ESTIMATED QUANTITY-CY ACTUAL

PLACEMENT FOREMAN: MBTA INSPECTOR

CONTRACT DOCUMENTS:

REMARKS:

PREPLACEMENT CHECKS

ITEM	CONTRACTOR INSPECTOR	MBTA INSPECTOR	REMARKS
EXCAVATE AND SUBGRADE			
FORMS – LINE AND GRADE			
FORMS – BRACED, READY TO POUR			
RE-STEEL - QUANTITY/LOCATION/TYPE			
RE-STEEL - SECURE AND CLEAN			
WATER STOPS/SEALS, JOINT PREP.			
PIPE – QUANTITY-SECURE-ELEV.			
ELEC. CONDUIT-QTY-SECURE-ELEV.			
GROUND WIRE			
ANCHOR BOLTS & RODS/EMBED ITEMS			
FORMS HEATED IN COLD WEATHER			
COLD WEATHER CURING PRECAUTIONS			
CLEAN-UP INSIDE FORMS			
METHODS OF CURING			
SLURRY			
GUIDE WALLS IN TOLERANCE			
BENTONITE SLURRY TESTING			
OTHER (IDENTIFY)			
O.K. TO PLACE CONCRETE		MBTA INSP.	DATE:

EXPANSION/EPOXY EMBEDDED ANCHORS
INSTALLATION AND INSPECTION REPORT

DATE: _____

CONTRACT NO.: CONTRACTOR:

ATTACHMENT LOCATION:

DRAWING/REV.:

SUBMITTAL:

PAY ACTIVITY:

TYPE, SIZE, NUMBER OF ANCHORS:

PREPLACEMENT CHECKS

INSPECTOR CHECKPOINTS	CONTRACTOR	DATE	MBTA	DATE
CONCRETE SURFACE				
ANCHOR HOLE LOCATION SURVEY AND MARKED				
EPOXY INJECTION SATISFACTORY				
TEMPERATURE RANGE SATISFACTORY				
TORQUE TEST				
ANCHORS INSTALLED CORRECTLY				

TEST WRENCH ID:_____ CALIBRATION DUE DATE: _____

REMARKS:

FIELD COATING INSPECTION REPORT

DATE:_____

CONTRACT NO.: CONTRACTOR:

LOCATION:

ITEM DESCRIPTION.:

COATING DATE: 1ST ☐ 2ND ☐ 3RD ☐

AREA INSPECTED:

SUBMITTALS: DRAWING/REV.:

PAY ACTIVITY:

INSPECTIONS	CONTRACTOR	DATE	MBTA	DATE
SHELF LIFE/STORAGE TEMPS NOT EXCEEDED; UNOPENED ORIGINAL CONTAINERS WITH LABELS. BATCH NUMBER_____				
SURFACES TO BE COATED ARE CLEANED OF OIL, GREASE AND OTHER DETRIMENTAL MATERIAL				
TOUCH UP BARE OR ABRADED SURFACES WITH APPROVED COATING				
FIELD CONNECTIONS (WELD, BOLTING) SURFACES CLEANED AND PROFILED PRIOR TO PRIMER				
MATERIALS MIXED AND PREPARED TO MANUFACTURER☐S RECOMMENDATIONS				
APPLICATION TO MANUFACTURER☐S SPECIFICATIONS				
CURE TIME ACHIEVED PRIOR TO COATING				
COLOR AS SPECIFIED				
COATING THICKNESS (DFT) REQUIRED _____ ACTUAL _____				

ENVIRONMENTAL RECORD
SURFACE TEMP_____ HUMIDITY _____
AMBIENT TEMP_____ DEW POINT_____
SURFACE CONDITIONS
_____
WEATHER CONDITIONS
_____

REMARKS:

GROUTING INSPECTION REPORT

DATE:_____

CONTRACT NO.: CONTRACTOR:

LOCATION:

DRAWING/REV.: SUBMITTAL:

SUBMITTAL:

DESCRIPTION OF

GROUT TYPE/ID: PAY ACTIVITY:

INSPECTIONS	CONTRACTOR	DATE	MBTA	DATE
RELEASE OF ITEM FOR GROUT				
SURFACE PREPARATION COMPLETE				
SURFACE DAMP FOR REQUIRED TIME				
ALL VOIDS FILLED				
COLD WEATHER PROTECTION				
GROUT CURE COMPLETE ☐ MOIST ☐ MEMBRANE				

PRESSURE GROUT

RELEASE OF ITEM FOR GROUT	
EXCESS WATER REMOVED	
TENDONS GROUTED WITHIN (15) DAYS OF STRESSING	
GROUT PUMPED CONTINUOUSLY UNTIL CONSISTENT AT UPPER VENT (A STEADY STREAM OF GOOD GROUT BEFORE CLOSING)	
PRESSURE # _____ HOLD TIME _____ BEFORE CLOSING	
REMARKS:	

MATERIAL RECEIVING INSPECTION REPORT

CONTRACT NO.: CONTRACTOR:

DATE: REPORT NO.:

MATERIAL RECEIVED:

DESCRIPTION:

QUANTITY:

SUBMITTAL NO.:

ACTIVITY NO.:

MANUFACTURER/SUPPLIER

RECEIVING INSPECTION REQUIREMENTS

REQUIREMENTS	REQ□D	REQ□D	SAT	UNSAT	REQUIREMENTS	SAT	UNSAT	N/A
MATERIAL CERTIFICATION					PHYSICAL CONDITION			
CERTIFICATE OF COMPLIANCE					PACKAGING			
SPECIAL TEST REPORTS					CLEANLINESS			
MANUALS					IDENTIFICATION/MARKINGS			
OWNER RELEASE FORM								

STORAGE AND MAINTENANCE REQUIREMENTS:

MATERIAL COMPLIES WITH CONTRACTURAL REQUIREMENTS: □ YES □ NO

COMMENTS:

CONTRACTOR REPRESENTATIVE DATE:

MBTA REPRESENTATIVE DATE:

POST TENSIONING INSPECTION REPORT

DATE_____

CONTRACT NO.: CONTRACTOR:

DRAWING/REV.: SUBMITTALS:

IDENTIFICATION/DUCT NUMBER:

PAY ACTIVITY:

	INSPECTION	CONTRACTOR	DATE	SURVEY CONT	SURVEY MBTA	MBTA	DATE
PLACEMENT	ELEVATION OF DUCT						
	DUCT PROFILES SMOOTH & CORRECTLY SHAPED						
	DUCT JOINTS MATED & SEALED WITH DUCT TAPE						
	ALL HOLES IN DUCT REPAIRED						
	SECURED TO PREVENT DISPLACEMENT DURING CONCRETING						
	DRAINS INSTALLED AT LOW POINTS						
	VENTS INSTALLED AT HIGH POINTS						
	BEARING PLATES SECURELY ATTACHED, ELEVATIONS & CONFIGURATION						
TENSIONING	ANCHOR HEADS FREE FROM CORROSION						
	WEDGES FREE OF RUST & STEEL SHAVINGS						
	PRESTRESSING STEEL FREE FROM CORROSION AND PROTECTED						
	EACH DUCT HAS THE SAME HEAT/REEL NUMBER INSTALLED						
	TENDONS STRESSED SLOWLY- ☐ ONE END ☐ BOTH						
	WEDGES SEATED EVENLY						
	TAILS CUT BY SAW						
	EQUIPMENT ID_____						
	_____						
	HEAT/REEL #_____						
	ELONGATED MARK INITIAL_____ FINAL_____						
	FINAL ELONGATION REQUIRED REQUIREMENT____ ACTUAL ___5% MAX D						
	Final Tension						

REMARKS

STRUCTURAL STEEL INSPECTION REPORT

DATE:_____

CONTRACT NO.: CONTRACTOR:

STRUCTURE: WELDING CODE:

DRAWING/REV.: PAY ACTIVITY:

SUBMITTAL:

AREA/LOCATION/ELEVATION/GRID/BAY/COL.LN.

CONFIGURATION

ITEM	INSPECTION	CONTRACTOR	DATE	SURVEY		MBTA	DATE
				CONT	MBTA		
1.	ANCHOR BOLTS						
2.	BASEPLATE ELEVATION & BEARING						
3.	BRIDGE BEARING TYPE & LOCATION						
4.	COLUMNS/BENTS						
5.	BEAMS/GIRDERS						
6.	EXPANSION JOINTS						
7.	STIFFENERS						
8.	DECK INSTALLATION						
9.	HIGH STRENGTH BOLTING						
10.	EXPANSION ANCHORS						
11.	WELD INSPECTION COMPLETE						
12.	FINAL ELEVATION TOP OF STEEL						

REMARKS

NO.

MBTA RESOLUTION REPORT

☐ DESIGN CHANGE	☐ NONCONFORMANCE
CONTRACTOR:	CONTRACT NO.
DOCUMENT AFFECTED: ☐ SPEC:	☐ DWG: ☐ OTHER:

DESCRIPTION:

ORIGINATOR:	DATE:	RES. ENG:	DATE:

DISPOSITION: ☐ DESIGN CHANGE ☐ NONCONFORMANCE ☐ ACCEPT AS IS ☐ REWORK ☐ REPAIR

PREVENTIVE ACTION:

DESIGNER:	DATE:	RES. ENG:	DATE:
PROJ. MGR:	DATE:	QA MGR:	DATE:

CORRECTIVE/PREVENTIVE ACTION COMPLETE:

CONTRACTOR:	DATE:	MBTA INSP:	DATE:
RES. ENG:	DATE:	OTHER:	DATE:

GENERAL CONSTRUCTION INSPECTION REPORT

Contract No: _____

Contract Title: _____

Inspection Date: _____

Plan No(s): _____

Specification Section(s): _____

Inspection Description (State The Work Inspected)
Results Of Inspection Including List of Deficiencies Noted, or State "No Deficiencies"

Contractor Representative: _____ **Date:** _____

Signature

QC Manager:

_____ **Date:** _____

Signature

SECTION 01500

CONSTRUCTION TEMPORARY FACILITIES AND TEMPORARY CONTROLS

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section specifies the general requirements for furnishing, installing, operating and removing construction temporary facilities and temporary controls during construction in accordance with Standard Specifications Division 1 - General Requirements, Section 01500, except as modified herein.

1.02 TEMPORARY FACILITIES AND SERVICES DURING CONSTRUCTION

A. During the progress of the Work, provide all temporary facilities and services including but not limited to, the following:

2. Light and Power

f. No light or power services shall be connected to the Authority's power service by the Contractor or by any utility company without approval and written permission of the Authority. The Contractor shall coordinate with the local electric utility company for temporary electrical service. The Contractor shall bear all associated costs.

END OF SECTION

SECTION 01520

PROCEDURE FOR WORK VEHICLES

1.01 DESCRIPTION

A. This Section specifies work procedure flagging requirements, and requirements for work vehicles for operation on running rails.

1.02 WORK VEHICLE PROCUREMENT

A. Provide work vehicles required for the performance of this Contract. Work vehicles will not be provided by the Authority.

1.03 WORK PROCEDURE

A. Generally, revenue service ceases by approximately 1:15 a.m. and commences at 4:45 a.m. if there are no problems. Therefore, where there could be utilizing or fouling of the tracks, the working hours of this Contract shall be considered to be approximately 1:30 a.m. until 4:30 a.m. Clearance for work vehicles shall be considered.

B. Request access to the tracks each day access is required. All requests for track access shall reach the Engineer before 10:00 a.m. on the normal work day preceding the day access is required. The Engineer will confirm granting of requests for access. If notice of denial of access is issued prior to 2:00 p.m. on the day preceding the access, the work shall be postponed and not counted as one of the denials allowed under the contract.

1.04 FLAGMEN REQUIREMENTS

A. Work performed during revenue hours adjacent to the track (which could involve utilizing or fouling the tracks) requires blue uniform MBTA flagmen.

B. Work performed during non-revenue hours requires flag protection by the Track Department, not the Operation Department.

C. Requests for flagmen shall reach the Engineer before 10:00 a.m. on the normal work day preceding the day the flagmen are required.

1.05 HI-RAIL EQUIPMENT

A. If Hi-Rail equipment is utilized to operate on running rails, adhere to the following:

1. All contractor Hi-Rail equipment working on MBTA tracks must be certified for use on tracks by MOW Engineers. No hi-rail vehicle shall be allowed on the tracks unless they have an MOW certification sticker. The certification sticker for hi-rail vehicles must state that the vehicle is approved for use on the Green Line. If the vehicle was previously certified for use on MBTA property, the certificate is void if ANY changes have been made to the vehicle including, but not limited to, the tires, body, frame or suspension.

2. The equipment shall pass a test run in the areas it will utilize to the satisfaction of the Maintenance of Way Department before it can be used for work. Subsequent to passing required tests the equipment shall receive certification by MOW. Only certified equipment shall be allowed to operate under this Contract.

3. Operate equipment after the last subway train has cleared, including any Authority work train, if applicable.

4. Operate two units of equipment, self-propelled, in case one unit becomes disabled and has to be towed clear before revenue operation time to avoid any delays to the passenger train operation. Both units shall be accompanied with separate portable radios.

5. Clear operating rails by 4:30 a.m. or as otherwise directed by the night orders and/or MBTA Dispatcher.

6. Each separate piece of Hi-Rail, self-propelled equipment shall have a MOW Equipment Operator assigned to it.

7. Vehicle shall carry equipment to re-rail the unit in the event the vehicle derails. This is to eliminate delays to Operations.

B. The Hi-Rail equipment shall be driven by a diesel engine. This engine has a higher flash point fuel and emits lower amounts of carbon monoxide than a gasoline engine. The fuel tank shall be of standard construction, sized for the type of vehicle and securely mounted. Fuel shall be #1 or #2 fuel oil with a flash point near 120 deg. F. Fuel piping and connections shall be made up to prevent oil or vapor leaks. The engine shall be maintained to prevent excessive exhaust emission and shall not be idled within the subway, preventing air contamination. No refueling shall be done within a subway section.

C. Equipment on Hi-Rail vehicle shall include adjustable flanged wheels which can be engaged with standard "T" track. These wheels shall be capable of being mechanically locked in the rail operating position to prevent inadvertent retraction during travel.

D. Hi-Rail equipment can be successfully operated at moderate speeds on main line tracks and at reduced speeds over turns, switches, and crossovers. Request from the Authority maximum operating speeds for the line the work is assigned. These maximum operating speeds shall be furnished to the vehicle operator and a "T" representative for guidance and enforcement.

E. Provide a fire extinguisher on the Hi-Rail Vehicle, as required for safety. Fuel and equipment shall be stored outside the subway and provisions made for proper ventilation.

F. One motorman (Authority personnel) will accompany each Hi-Rail vehicle piece of equipment in its moves at no additional cost to the Authority.

1.06 SAFETY

A. As a requirement of this Contract at any place of work, whether in the Right-of-Way or surface work and during the non-daylight hours, MOW Flag persons shall be required. Provide a minimum of two lighted red lanterns. Lanterns shall be set out on the tracks only by MOW flag persons. These lanterns shall be maintained in good operating condition throughout the length

of the job. A copy of the MBTA handbook, "Hand, Flag, Lantern, and Safety Care Signal Safety Rules" (Latest Edition) is available for guidance.

B. Explosive materials, including, but not limited to propane and gasoline tanks, will not be allowed in the stations during revenue hours.

1.07 RADIOS

A. As a requirement of this Contract, provide multiband FM two-way portable radios in accordance with MBTA Specification C6, latest revision. These radios shall accompany each piece of Hi-Rail equipment and various splintered work parties during work in or adjacent to the station that could affect operations. Also supply three portables to the Engineer for their exclusive use. Maintenance of radios will be the responsibility of this Contract for its duration. Numbers for radios will be assigned by the MBTA for safety purposes. The radios shall be in proper working order when turned over to the Authority. Provide replacement radios for those radios out for maintenance. Authority will return radios upon completion of the Contract.

1.08 MEASUREMENT AND PAYMENT

A. No separate measurement or payment will be made for work required under this Section. Costs in connection therewith will be considered incidental to the item or items of work to which they pertain.

END OF SECTION

SECTION 01545

PROTECTION OF WORK AND PROPERTY

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section specifies the general requirements for temporary protection of work and property during the Contract period in accordance with Standard Specifications Division 1 - General Requirements Section 01545, except as modified herein.

1.02 TEMPORARY PROTECTION

A. Protect:

4. All components of MBTA transit operations wherever exposed to potential damage of any feasible kind including but not limited to trackbed, track and switches, catenary system and supports, and signal system. Particular care must be taken not to allow dirt, sand, debris or other foreign material to accumulate on or be mixed with the trackbed ballast. **The Contractor shall perform an existing condition survey of the inbound and outbound tracks both before and after any work occurs within the zone-of-influence of the existing track. Contractor must submit the precondition survey together with a plan to MOW detailing how track shall be protected during all work. Excavation within zone-of-influence of track shall not take place until plan is approved by MOW.**

5. All public rights of way and area utilities wherever exposed to potential damage of any feasible kind. Temporary protection shall be constructed and maintained. Contractor shall submit shop drawings of temporary protection structures to the Engineer for review and approval before commencing work.

6. All existing vegetation, including shrubs, trees and ground cover against injury.

7. All existing platform furnishings and equipment from injury or defacement.

END OF SECTION

SECTION 01550

HOT WORK

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section specifies "Hot Work" fire control procedures for contractors and their personnel, including cutters, welders and operators of heating equipment. Hot work is any work that utilizes or produces an ignition source.

1.02 JOB CONDITIONS

A. Perform "Hot Work" operations as follows:

1. Ensure the safe handling of "Hot Work" equipment and the safe use of the particular "Hot Work" process.

2. Determine the combustible materials and hazardous areas present or likely to be present in the work locations.

3. Protect combustibles from ignition by the following:

   a. Have work moved to a location free from dangerous combustibles.

   b. If the work cannot be moved, have the combustibles moved to a safe distance from the work or have the combustible properly shielded against ignition.

   c. See that "Hot Work" is so scheduled that any operation which might expose combustibles to ignition is not started during the "Hot Work".

4. Give notice to the project office of the need to perform "Hot Work" operations and secure authorization from the Engineer.

5. Ensure that the cutter or welder secures his or her supervisor's approval that conditions are safe before going ahead with the work.

6. Ensure that fire protection and extinguishing equipment are properly located at the site.

7. Where fire watchers are required, see that they are available at the site.

8. Shall not use the signal rail system of a single rail track circuit as a negative return.

9. Procure all required permits as per Section 00700, Articles 5.01 and 5.02.

B. Ensure the worker handles the "Hot Work" equipment safely and uses it so as not to endanger lives or property and:

1. Has the approval of his or her supervisor and the MBTA project office before starting any "Hot Work";

2. Does not perform any "Hot Work" where conditions are not safe;

3. Continues to perform "Hot Work" only so long as conditions are unchanged from those under which approval was granted.

1.03 FIRE PREVENTION PRECAUTIONS

A. Permit "Hot Work" only in areas that are or have been made fire safe. Within the confines of a building or other enclosed structure, perform cutting and welding operations preferably in a specific area designed or approved for such work, such as a maintenance shop or a detached outside location. Ensure that such areas are of noncombustible or fire-resistive construction, essentially free of combustible and flammable contents, and suitably segregated from adjacent areas. When work cannot be moved practicably, as in most construction work, make the area fire safe by removing combustibles or protecting combustibles from ignition sources.

B. Do not permit "Hot Work" in the following situations:

1. In areas not authorized by the project office;

2. In sprinklered buildings while such protection is impaired;

3. In the presence of explosive atmospheres (mixtures of flammable gases, vapors, liquids or dusts with air), or explosive atmospheres that may develop inside uncleaned or improperly prepared tanks or equipment which have previously contained such materials, or that may develop in areas with an accumulation of combustible dusts;

4. In areas near the storage of large quantities of exposed, readily ignitable materials such as bulk sulphur, baled paper or cotton.

C. Before "Hot Work" is permitted, the Engineer will give notification authorizing the "Hot Work", and designate precautions to be followed. He will have designated MBTA personnel inspect the work area for fire safety, as indicated herein, and which personnel will complete a "Hot Work" checkoff list. The Engineer will also assure himself of the following:

1. The "Hot Work" equipment to be used is in satisfactory operating condition and in good repair.

2. Where there are combustible materials such as paper clippings, wood shavings or textile fibers on the floor, sweep the floor clean for a radius of 35 feet. Keep combustible floors wet, covered with damp sand, or protected by fire-resistant shields. Where floors have been wet down, protect personnel operating arc welding or cutting equipment from possible shock.

3. Where practicable, relocate combustibles at least 35 feet from the work site. Where relocation is impracticable, protect combustibles with flame-proofed covers or otherwise shield with metal or fire-resistant guards or curtains. Secure edges of covers at the floor so they are tight to prevent sparks from going under them. This precaution is also important at overlaps where several covers are used to protect a large pile.

4. Tightly cover wall or floor openings or cracks within 35 feet of the site to prevent the passage of sparks to adjacent areas.

5. Suitably protect or shut down ducts and conveyor systems that might carry sparks to distant combustibles.

6. Where "Hot Work" is done near walls, partitions, ceilings or roofs, or combustible construction, provide fire-resistant shields or guards to prevent ignition. If welding is to be done on a metal wall, partition, ceiling or roof, take precautions to prevent ignition of combustibles on the other side, due to conduction or radiation, preferably by relocating combustibles. Where combustibles are not relocated, provide a fire watch on the opposite side of the work. Do not attempt welding on a metal partition, wall, ceiling or roof having a combustible covering, nor on walls or partitions of combustible sandwich-type panel construction.

7. Do not undertake to perform "Hot Work" on pipes or other metal in contact with combustible walls, partitions, ceilings or roofs if the work is close enough to cause ignition by conduction.

8. Provide sufficient quantities of portable fire extinguishers, appropriate for the type of possible fire, at the work area. Where hose lines are available, connect them so they are ready for service.

9. Suitably protect nearby personnel against heat, sparks, slag, etc.

D. Require the services of Fire Watchers whenever "Hot Work" is performed in locations where other than a minor fire might develop, or where the following conditions exists:

1. Appreciable combustible material in the building construction or contents is closer than 35 feet to the point of operation.

2. Appreciable combustibles are more than 35 feet away, but are easily ignited by sparks.

3. Wall or floor openings within a 35-foot radius expose combustible material in adjacent areas including concealed spaces in walls or floors.

4. Combustible materials are adjacent to the opposite side of metal partitions, walls, ceilings or roofs, and are likely to be ignited by conduction or radiation.

Fire Watcher's responsibilities include:

1. Have fire extinguishing equipment readily available and be trained in its use.

2. Be familiar with facilities for sounding an alarm in the event of fire.

3. Watch for fires in exposed areas, and try to extinguish them only when obviously within the capacity of the equipment available, or otherwise sound the alarm.

4. Maintain a fire watch for at least one-half hour after completion of "Hot Work" operations to detect and extinguish possible smoldering fires.

E. Where a Fire Watch is not required, make a Final Check-Up one-half hour after the completion of "Hot Work" operations to detect and extinguish possible smoldering fires.

F. Have "hot tapping" operations or other cutting or welding on a flammable gas or liquid transmission or distribution utility pipeline performed only by a crew qualified to make hot taps.

1.04 MEASUREMENT AND PAYMENT

No separate measurement or payment will be made for work required under this Section. Costs in connection therewith will be considered incidental to the item or items of work to which they pertain.

END OF SECTION

SECTION 01560

TEMPORARY CONTROLS

1.01 DESCRIPTION

A. This Section specifies the general requirements for furnishing, installing, and operating temporary controls during construction in accordance with Standard Specifications Division 1 - General Requirements Section 01560 except as modified herein. .

1.03 LAWS TO BE OBSERVED

E. Energy policy and Conservation Act

1. Comply with mandatory standards and policies relating to energy efficiency which are contained in the State energy conservation plan issued in compliance with the Energy Policy and Conservation Act (42 USC Section 6321 et. seq.).

F. Environmental Violations

1. Comply with the Massachusetts Department of Environmental Protection Regulations for Releases of Oil and Hazardous Materials and all other requirements of the Environmental Protection Agency regulations of the Clean Air Act and Clean Water Act and any other provisions of law, or amendments thereto including the laws or regulations of local municipalities.

2. All diesel construction equipment used in this contract shall have emission control device installed, such as oxidation catalysts or particulate filters on the exhaust system side of the diesel combustion engine equipment.

1.09 SITE SECURITY AND ACCESS

A. The Contractor shall prepare and submit to the Engineer for approval, a site specific security plan for the all phases of the Work. This plan shall be detailed to address all site security issues of the Work including all subcontractor efforts. The plan shall be maintained and updated as required throughout the Contract duration. The Contractor, Subcontractor, Vendors and Suppliers are required to comply with the approved site security plan at all times. The Contractor is required to provide identification badges for all employees including subcontractors. The badges must include personal photograph, name and employer and must be visible when worn at all times.

1.10 MEASUREMENT AND PAYMENT

No separate measurement or payment will be made for Work required under this Section. All costs in connection therewith will be considered incidental to the item or items of work to which they pertain

END OF SECTION

SECTION 01567

HEALTH AND SAFETY PLAN

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section specifies requirements for the preparation and implementation of a Health and Safety Plan (HASP) by the Contractor for the protection of all site personnel of the Contractor and his subcontractors working with or exposed to oil and/or hazardous materials (OHM) or contaminated soil or groundwater. Such Plan shall also provide for project-related health and safety of site visitors and persons in the surrounding community that may be affected by the Work and shall include provisions to prevent the off-site migration of contaminated materials or dust.

B. Prior to beginning work involving soil or groundwater contaminated from a release of OHM (as defined in 310 CMR 40.0000), the Contractor shall develop a site Health and Safety Plan prepared by a certified industrial hygienist; the certified industrial hygienist shall be certified by the American Board of Industrial Hygiene in Comprehensive Practice. The Health and Safety Plan shall be consistent with all applicable Federal and State regulations including, but not limited to, any applicable requirements of the Massachusetts Contingency Plan, particularly 310 CMR 40.0018.

C. The Contractor is responsible for all health and safety issues relating to the Work. The Contractor shall further be solely responsible for compliance with all Federal and State laws and regulations pertaining to maintenance by employer of chemical exposure and medical records.

1.02 HEALTH AND SAFETY PLAN REQUIREMENTS AND CRITERIA

A. The Contractor shall engage an independent certified industrial hygienist to review the available environmental data and identify applicable site conditions, and to develop a Health and Safety Plan. It shall be the responsibility of the certified industrial hygienist to make interpretations and draw conclusions with respect to the conditions at the site and their impact on health and safety of the Contractor's personnel and others that may be affected by the Work. At his own expense, the Contractor or his hygienist may, with permission of the Authority, collect whatever environmental samples or perform whatever tests he deems necessary to complete and implement the Health and Safety Plan. The Health and Safety Plan shall be developed in accordance with generally accepted practices for industrial hygiene, applicable OSHA regulations and NIOSH guidelines, and any DEP requirements.

B. The Health and Safety Plan shall, at a minimum, pertain to all excavation, soil, and groundwater handling work involving OHM contaminated materials or site conditions performed under the Contract, and shall include, but not necessarily be limited to the following components:

1. Site description and a discussion of responsibilities and relationships of key personnel associated with the implementation of health and safety procedures at the Site and appointment of a Project Safety and Health Officer (or equivalent).

2. Health and safety training and personal monitoring/medical surveillance requirements

for site personnel.

3. Safety and health hazard analysis associated with work and other sources identified by the certified industrial hygienist.

4. Chemical hazards and the potential for worker exposures associated with the presence or handling of contaminated materials and other sources identified by the certified industrial hygienist. This should include standard operating procedures, engineering controls, and work practices. The criteria to be used for triggering implementation of various aspects of the Plan shall be specifically identified.

5. Site specific health and safety procedures associated with identified hazards and activities including potential hazards of contaminated soils. Procedures shall identify and describe the use of air monitoring, site control measures, and personal protective equipment.

6. Scope and schedule of environmental monitoring. The Health and Safety Plan should include procedures for monitoring, action levels, and the required response actions when action levels are exceeded.

7. Personal hygiene and decontamination procedures for each site task and operation. Requirements for personal hygiene practices and on-site decontamination protocols to be followed by workers shall be included.

8. Record keeping and documentation procedures including logs, reports, and schedule of site visits by the certified industrial hygienist.

9. Emergency response procedures to be followed in the event of fire, explosion, exposure to toxic substances, personal injury or other medical emergency, including requirements for on-site instruction of personnel in these emergency procedures. Refer to Paragraph 1.03 for additional requirements.

10. Any additional health and safety precautions or items deemed appropriate for this project by the certified industrial hygienist.

1.03 EMERGENCY RESPONSE AND CONTINGENCY PLAN REQUIREMENTS

A. The Contractor shall prepare an Emergency Response and Contingency Plan for on-site emergencies relating to the handling of OHM contaminated soil. The Emergency Response and Contingency Plan shall apply to the on-site discovery of or contact with OHM that pose or could pose an Imminent Hazard as defined by 310 CMR 40.0320 of the Massachusetts Contingency Plan (MCP). The Contractor has sole responsibility for the initial response to Imminent Hazards.

B. The Emergency Response and Contingency Plan, specifically prepared for the Work of this Contract, shall be consistent with all applicable Federal and State regulations including, but not limited to, the following:

1. Massachusetts Contingency Plan, 310 CMR 40.0000;

2. National Contingency Plan, Section 105 of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA);

3. Occupational Safety and Health Act, 29 CFR Part 1910.120, Hazardous Waste Operations and Emergency Response;

4. Spill Prevention and Countermeasure Plan, 40 CFR Part 112;

5. Massachusetts Right-To-Know requirements.

1.04 MATERIALS

A. All health and safety materials and equipment shall conform, at a minimum, to applicable OSHA and NIOSH standards.

1.05 IMPLEMENTATION

A. The services of a certified industrial hygienist shall be retained by the Contractor for the duration of construction operations. Retained individual shall have had documented experience in construction health and safety. Certified industrial hygienist shall, in addition to development of the Health and Safety Plan, be responsible for ensuring monitoring of site activities for compliance with the Health and Safety Plan and interpretation of and modifications to the Plan, where necessary.

B. The Health and Safety Plan shall be implemented, administered, and enforced by the Contractor under the direction of his certified industrial hygienist.

C. A written copy of the site Health and Safety Plan shall be available on the site to all on-site employees, visiting personnel from OSHA, DEP, and other state or local government agencies, and to on-site personnel of the Authority, Engineer or their designated agents. Additionally, Contractor shall maintain available on site copies of all certifications of training and proof of any required medical monitoring for each employee.

D. The certified industrial hygienist engaged by the Contractor shall maintain logs and reports documenting the implementation of the Health and Safety Plan and, after the completion of all earthwork activities, prepare a report that contains documentation of health and safety procedures implemented during the work. This report shall be provided to the Authority for incorporation into the project records. This report shall contain, at a minimum, the following items: the results of all personnel and site monitoring; any accidents, exposures, or OHM releases which occurred during the work and actions taken; a log of all site visits by the certified industrial hygienist; modifications to the Health and Safety Plan.

1.06 IMMINENT HAZARD INCIDENTS

A. Should an incident occur that, in the opinion of the Contractor's Project Safety and Health Officer (or equivalent), poses or could pose an Imminent Hazard, work within the area influenced by the incident shall be suspended until appropriate release notification and Immediate Response Actions as defined by 310 CMR 40.0410 of the MCP have been completed, and the Imminent Hazard condition is controlled.

1.07 MEASUREMENT AND PAYMENT

A. No separate measurement nor payment will be made for the work in this Section; all costs in connection therewith shall be included in the prices paid for the item to which it pertains.

END OF SECTION

SECTION 01568

CONSTRUCTION SAFETY

1.01 DESCRIPTION

A. This Section specifies requirements to establish a practical, sound, and effective program for the prevention of accidents, and to assign specific responsibilities to Contractors for program compliance.

B. This basic safety program has been designed to assist all site Contractors and their supervisors to recognize, evaluate and control hazardous activities and conditions within their respective areas of contract responsibility.

C. The attached MBTA "Construction Safety Manual," including Safety policy/Procedure (Contractor Safety Violation Program) forms a part of the Contract Specifications and is hereby included on the following pages of this Section 01568.

1.02 MEASUREMENT AND PAYMENT

A. No separate measurement or payment will be made for work required under this Section. All costs in connection therewith will be considered incidental to the item of work to which they pertain.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY
BOSTON, MASSACHUSETTS

Prepared by:

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY
SAFETY DEPARTMENT

Date Issued: October 26, 1995

Revision: 1.0

TABLE OF CONTENTS

SECTION	TITLE	PAGE
	Definitions	
1.0	ADMINISTRATION AND ORGANIZATION	
1.1	Purpose and Scope	
1.2	Program Objectives	
1.3	Program Effectiveness	
1.4	Organization and Administration	
	1.4.1 Project Safety Organization	
	1.4.2 General	
	Safety Responsibilities	
2.0	GENERAL SAFETY REQUIREMENTS	
2.1	Submittal of Safety Program and Qualifications	
2.2	Requirements	
	2.2.1 Emergency Action Plan	
	2.2.2 First Aid Facilities	
	2.2.3 Serious Accidents	
	2.2.4 Posting of Emergency Telephone Numbers	
	2.2.5 Emergency Plan Implementation	
2.3	Protection of the Public	
	2.3.1 Protective Measures	
2.4	Group Tours and Site Visitors	
	2.4.1 Conduct of Tours	
2.5	Substance Abuse/Prevention/Testing Program	
2.6	Criteria for Substance Abuse Policy and Testing Programs for Construction Contractors	

SECTION	TITLE	PAGE
	2.6.1 Deterrence	
	2.6.2 Treatment and Rehabilitation	
	2.6.3 Detection	
	2.6.4 Enforcement	
3.0	**INSTRUCTION AND TRAINING**	
3.1	Basic Elements	
3.2	Procedures	
	3.2.1 Indoctrination	
	3.2.2 Right-of-Way Safety Awareness	
	3.2.3 Work Assignments	
	3.2.4 Meetings	
	3.2.5 Personal Contacts	
	3.2.6 Specific Instruction	
	3.2.7 Promotional Material	
	3.2.8 Bulletin Board	
4.0	**WORK PRACTICES AND CONTROL**	
4.1	Procedures	
	4.1.1 Supervisory Controls	
	4.1.2 Project Controls	
	4.1.3 Working On Or Near Third Rail	
5.0	**PHYSICAL CONDITIONS CONTROL**	
5.1	Procedures	
	5.1.1 Planning	
	5.1.2 Responsibility	

SECTION	TITLE	PAGE
	5.1.3 Inspections	
	5.1.4 Information Exchange	
	5.1.5 Equipment and Facilities	
	5.1.6 Notifications of Hazards	
	5.1.7 Work Authorizations	
6.0	**SAFE PRACTICE STANDARDS**	
6.1	Procedures	
	6.1.1 Housekeeping	
	6.1.2 Equipment Standards	
	6.1.3 Electrical	
	6.1.4 "Lock-Out" "Tag-Out" Clearance Procedure	
	6.1.5 Tools	
	6.1.6 Welding and Cutting	
	6.1.7 Ladders	
	6.1.8 Scaffolding	
	6.1.9 Concrete and Concrete Forms	
	6.1.10 Floor and Wall Openings	
	6.1.11 Steel Erection	
	6.1.12 Excavations, Trenching and Shoring	
	6.1.13 Personal Protective Equipment	
	6.1.14 Blasting	
	6.1.15 Fire Prevention	
6.2	Hot Work Requirements	
	6.2.1 Description	
	6.2.2 Submittals	

SECTION	TITLE	PAGE
	6.2.3 Fire Prevention Precautions	
6.3	Confined Space Entry Procedure (CSEP)	
	6.3.1 Purpose	
	6.3.2 Confined Space Identification	
6.4	Responsibilities	
	6.4.1 Implementation and Pre-Entry Requirements	
	6.4.2 Requirements, Confined Space Operations	
	6.4.3 Entry Into and Work Within Confined Spaces	
7.0	**HAZARDOUS SUBSTANCES/COMMUNICATION**	
7.1	Purpose and Scope	
7.2	General Requirements	
7.3	Reporting and Hazardous Substances	
8.0	**OSHA REGULATIONS, CONSTRUCTION**	
8.1	OSHA	
8.2	Familiarization with OSHA Safety Standards	
8.3	Reporting of Fatal/Serious Accidents to OSHA	
8.4	OSHA Poster	
9.0	**ACCIDENT INVESTIGATION, REPORTING AND RECORDKEEPING**	
9.1	First Aid	
9.2	OSHA Recordable	
	9.2.1 Analysis and Corrective Action	
	9.2.2 Recordkeeping	
9.3	Procedures	
	9.3.1 Investigations and Reports	
	9.3.2 Photographs	
9.4	Telephone Reports	

DEFINITIONS

TERM	ABBREVIATION	DEFINITION
MBTA Project	PM	Authorized representative of the Manager MBTA responsible for specific contracts administered by the Resident Engineers.
MBTA	CM	The Authority is responsible for construction management
Contract		The written agreement executed by the Authority and the Contractor, setting forth the obligations of the Parties thereunder.
Contractor		The individual, firm, partnership, corporation, or combination thereof, private, municipal or public, including joint ventures, which, as an independent contractor, has entered into a Contract with the Authority, as Party or Parties of the Second Part, and who is referred to throughout the Contract Documents by singular number.
Subcontractor		The individual, firm, partnership, corporation, vendor, supplier, or combination therefore to whom the Contract, with written approval of the Authority, sublets any part of the Contract.
General Engineering Consultant	GEC	Specific for each contract.
Project		That specific portion of MBTA Transit System indicated in the Contract Documents.
Engineer		The General Manager of the Authority or designee Acting within the scope of the particular duties entrusted to this person.
Resident Engineer	RE	MBTA's field representative responsible for the completion of specific construction contracts.
Contractor Project	CPM/CPS	Contractor's senior management official Manager/Superintendent responsible for the Project beginning with preconstruction activities and extending to final completion of the work.
Safety Director	SD	MBTA's Director of Safety
Contractor Safety Supervisor	CSS	Representative of the Contractor whose sole responsibility is safety and loss prevention.

TERM	ABBREVIATION	DEFINITION
Experience		Individual who possesses at least five years of heavy construction experience. three of which include full-tie on-site safety responsibility. Must be knowledgeable through education and training in occupational safety and health laws and regulations (construction and general industry). It is preferred that the individual possess the CSP designation.
MBTA Safety Manager	PSM	MBTA appointed representative responsible for safety implementation.
Foreman	F	Contractor's Craft Supervisor.

1.0 ADMINISTRATION AND ORGANIZATION

1.1 PURPOSE AND SCOPE

To establish a practical, sound and effective program for the prevention of accidents, and to assign specific responsibilities to Contractors for program compliance.

This basic safety program has been designed to assist all site Contractors and their supervisors to recognize, evaluate and control hazardous activities and conditions within their respective areas of contract responsibility.

The minimum accident prevention activity expected from each Contractor is indicated in each of the following program sections; fewer than these minimums
will be considered substandard.

1.2 PROGRAM OBJECTIVES

The objective of this policy is to establish the concept that people and property are our most important assets.

To achieve this goal, all Project safety and loss control efforts shall be directed towards a single goal, the elimination of personal injuries and damage to property, and to minimize the effects of accidents on both the individuals and on the project. Beyond satisfying the obvious humanitarian and moral obligations, specific objectives of the program are:

a. Increased efficiency and attendant cost reductions.

b. Compliance with all statutory requirements.

c. Maintenance of favorable labor and community relations.

d. Improvements of relationship with regulatory agencies.

e. Avoidance of penalties.

1.3 PROGRAM EFFECTIVENESS

The effectiveness of the MBTA Construction Safety Program will depend upon the active participation and personal cooperation of all supervisors and employees, and positive coordination of their efforts toward carrying out the following responsibilities:

1.3.1 Establishing and maintenance of a positive environment and attitude by all levels of management.

1.3.2 Proper planning of all work to minimize personal injury, property damages and loss of production efforts.

1.3.3 Provide constant and consistent safety.

1.3.4 Establish and maintain a system for early detection and correction of unsafe practices and conditions.

1.3.5 Provide adequate protection of adjacent public and private properties to provide for the safety of the public.

1.3.6 Establish and implement safety education programs designed to stimulate and maintain the interest and active participation of all personnel involved with the Project.

a. Safety meetings and safety communications.

b. Investigations of accidents and safety incidents to determine cause, and the taking of necessary corrective actions.

c. Use of proper work procedures, personnel protection equipment and mechanical guards.

d. Safety instruction to individual employees and group safety training program.

c. Maintenance of records of accidents and losses and development of accident/loss experience summaries.

1.4 ORGANIZATION AND ADMINISTRATION

1.4.1 Project Safety Organization

See Exhibit 1-1, Project Safety Organization Chart.

1.4.2 General

This document establishes minimum standards of performance for the implementation and conduct of Safety Operations during the course of a Project.

Each contractor shall take all reasonable precautions in the performance of the work under his contract to protect the safety and health of its employees and members of the public and shall comply with all applicable MBTA, Local, State and Federal safety and health regulations and requirements (including reporting requirements).

The MBTA shall notify the Contractor of any non-compliance and of the corrective action required. This notice, when delivered the Contractor or the Contractor's representative at the site of the work, shall be deemed sufficient notice of the non-compliance and corrective action required after receiving the notice, the contractor shall immediately take corrective action. If the contractor fails or refuses to take corrective action promptly, the MBTA may, without prejudice to other legal or contractual rights, issue an order stopping all or part of the work; and may subject contractor to safety violation assessments as deemed appropriate by the MBTA thereafter, resumption may be issued at the discretion of the MBTA.

The Contractor shall maintain an accurate record of exposure data on all accidents and incidents occurring under this contract and report this data in a manner prescribed by the MBTA.

The Contractor shall be responsible for all its lower-tier subcontractor's and vendor's compliance.
Contractor management shall make a commitment for accident prevention and fire prevention. Safety shall take precedence over schedule and production. Enforcement action is mandatory.

1.4.3 Safety Responsibilities

a. **Contractor**

To assist Contractors in fulfilling their responsibility, a Construction Safety Inspection Check List (Exhibit 5.1) has been included in this manual for their use. Contractors are reminded that this list is not all inclusive and must be considered only a minimum. Contractors should add to it for their particular type of work and work site conditions.

The key to an effective safety program is a proactive Contractor who is expected to take the initiative in accident prevention. Contractors, managers and supervisors will be held accountable for the Safety performance demonstrated by the employees under his/her supervision. The Contractor's responsibilities for safety cannot be delegated to Subcontractors, suppliers of other individuals. Each Contractor is required to designate a full-time; on-site Safety Supervisor who is charged with sole responsibility of on-site safety management under the direction of the Contractor's Project Manager/Superintendent. It is expected that potential safety hazards found to exist on the job will be promptly corrected through informal communications between the Contractor between the Contractor and the MBTA. notwithstanding these informal procedures, it should be clearly understood that formal communications regarding accident prevention and safety enforcement shall be maintained between the Contractor and the MBTA. Such formal communications are necessary to provide follow-up action on the part of the Contractor and to prevent misunderstandings.

The Contractor is responsible for compliance with the accident prevention and safety requirements contained in this manual and its contract with the MBTA. To achieve this goal, the Contractor shall:

1. Within five (5) days after receipt of notification of contract award, submit to the MBTA a letter signed by the senior operating official of the Contractors organization setting forth the following:

    a. A statement of its company's safety policy based upon compliance with the MBTA Construction Safety Program.

    b. A detailed site specific safety plan which reflects the Contractor's intentions for full and complete compliance with the MBTA Construction Safety Program and the provisions of its contract with the MBTA.

    c. A statement which will reflect its awareness and knowledge of all local, state and federal health and safety codes applicable to its contract with the MBTA.

2. Submit a resume of the qualifications and work experience of the designated Safety Supervisor proposed for assignment to the Project as specified by the Safety and First Aid requirements Section of the Contract. The resume shall be reviewed by the MBTA Safety Department. Contractor's designated Safety Supervisor may be required to appear for a personal interview before designated representatives of the MBTA Project staff and the MBTA Safety Department.
3. Establish and maintain an orientation program for new employees which shall include:

a. For each individual the hazards present in their work assignment and in the general area in which he will be working.

b. Personal protective equipment required.

c. Instruction in the proper procedure for reporting unsafe job conditions which he/she may encounter.

d. All workers employed by the Contractor who are to work within the Authority's track area, right-of-way or adjacent to the power traction system, shall be required to attend an up to four (4) hour safety awareness course at the Authority's Safety Training location. The location and time of such school will be at the sole discretion of the Authority. The intent of this course is to make the Contractor's personnel aware of the particular hazards related to the Authority's operations.

At the completion of the Safety Awareness Training, attendees will be issued a serialized sticker for the hard hat and a serialized certification card. The employee must display the hard hat sticker on the left side of their hard hat and carry the card certification on their person at all times when working on the Authority projects. (See Exhibit 1-2)

e. All personnel working in the immediate vicinity of, or within the right-of-way are required to wear orange safety vests similar to standard Authority equipment. In addition, all Contractors personnel or groups of personnel, working within the right-of-way or within eight (8) feet of track will require the presence of an Authority flagperson on duty at all times.

4. Furnish to the MBTA a copy of all citations and/or warnings of safety violations received from any state or federal jurisdiction agency by its organization or by any of its subtier Contractor organizations.

b. <u>Contractor's Project Manager/Superintendent</u>

As the direct representative of the Contractor at the site the Project Manager/ Superintendent shall:

1. See that the Contractor's responsibilities set forth in the safety provisions are fully complied with.

2. Supervise the designated Safety Supervisor in the discharge of its duties and responsibilities.

3. Plan and execute all work in compliance with the stated objectives of the MBTA Construction Safety Program.

4. Assure cooperation with the MBTA Safety Project Manager.

5. Take immediate action to correct unsafe or unhealthful work practices or conditions as necessary.

6. Review and implement administrative actions required to maintain complete and accurate safety records as specified by the MBTA Construction Safety Program recordkeeping requirements.

7. Attend safety meetings as directed by the MBTA Safety Project Manager.

8. Assure that appropriate first aid plans and facilities are established and implemented as stated and outlined in contract.

c. Contractor's Safety Supervisor

1. Make daily safety inspections of the job site(s) and public area contiguous and adjacent thereto and take necessary and timely corrective action(s) to eliminate unsafe acts and/or conditions. Record observations as directed using Construction Safety Survey Report Form Exhibit 8-1 in conjunction with Job Site Daily Safety Checklist.

2. Construction Safety Audit Checklist (Exhibit 5-1) will be completed weekly by Contractor's Safety Supervisor.

3. Review Foreman accident and investigation reports, as required, to assure timely submission, and to initiate corrective action(s) to prevent recurrence.

4. Provide Foremen with material suitable for use in conducting weekly "tool box" safety meetings.

5. Review safety meeting reports submitted by Foremen to ensure adequacy of training as well as subject matter.

6. Assist Foreman in accident investigations and preparation of required reports.

7. Establish and implement a safety training program for Supervisors and employees as applicable to their specific job.

8. Encourage establishment of incentive programs designed to recognize individual employee safety efforts and contributions towards improved safety.

9. Attend safety meetings held by the MBTA.

10. Maintain copies of all required Contractor safety reports.

d. Foremen

Foremen are in first level of supervision. These are the key individuals in an effective safety program. Their initiative and efforts toward accident prevention on their daily assignments largely determines whether or not a required high degree of safety exists on the job.

A Foreman's responsibility includes:

1. Inspection of its assigned job area to assure that unsafe acts or conditions are identified and corrected.

2. Ensures that safety requirements are adhered to and enforced.

3. Provides and requires the use of proper personal protective equipment and suitable tools for the job.

4. Sets a good example for his/her crew in the matter of safety.

5. Sees that his/her assigned crew is properly instructed in safe work practices when they first arrive on the job and every day thereafter.

6. Investigates all accidents under his/her direct control to determine facts necessary for corrective action.

7. Promptly completes accident reports as required.

8. Conducts weekly "toolbox" safety meetings with personnel to:

   a. Discuss type of work to be or being accomplished and potential risks and/or unsafe conditions to be aware of.

   b. Discusses unsafe work practices and conditions noted.

   c. Reviews accident experience with the crew and discuss corrective action(s).

   d. Encourages personnel to make safety suggestions and to pass these onto the Safety Supervisor for evaluation and possible implementation.

   e. Ensures that prompt first aid is administered.

e. MBTA

The MBTA is responsible for:

1. Inspection, surveillance, and monitoring the safety practices of the Contractor.

2. Requiring timely application of safety and accident prevention procedures to all job site activities and to all persons on the Project including Subcontractor, Visitors, Suppliers and other authorized personnel.

3. Documenting unsafe work conditions wherever observed and reports these conditions per internal MBTA guidelines and issuing citations when warranted, for willful safety violations.

4. Notifying Contractors, in writing, of persistent noncompliance with Project safety requirements.

5. Notifying Contractors or individuals who continually and deliberately violate safety regulations and where appropriate, initiate action to the Contractor or individual from the Project.

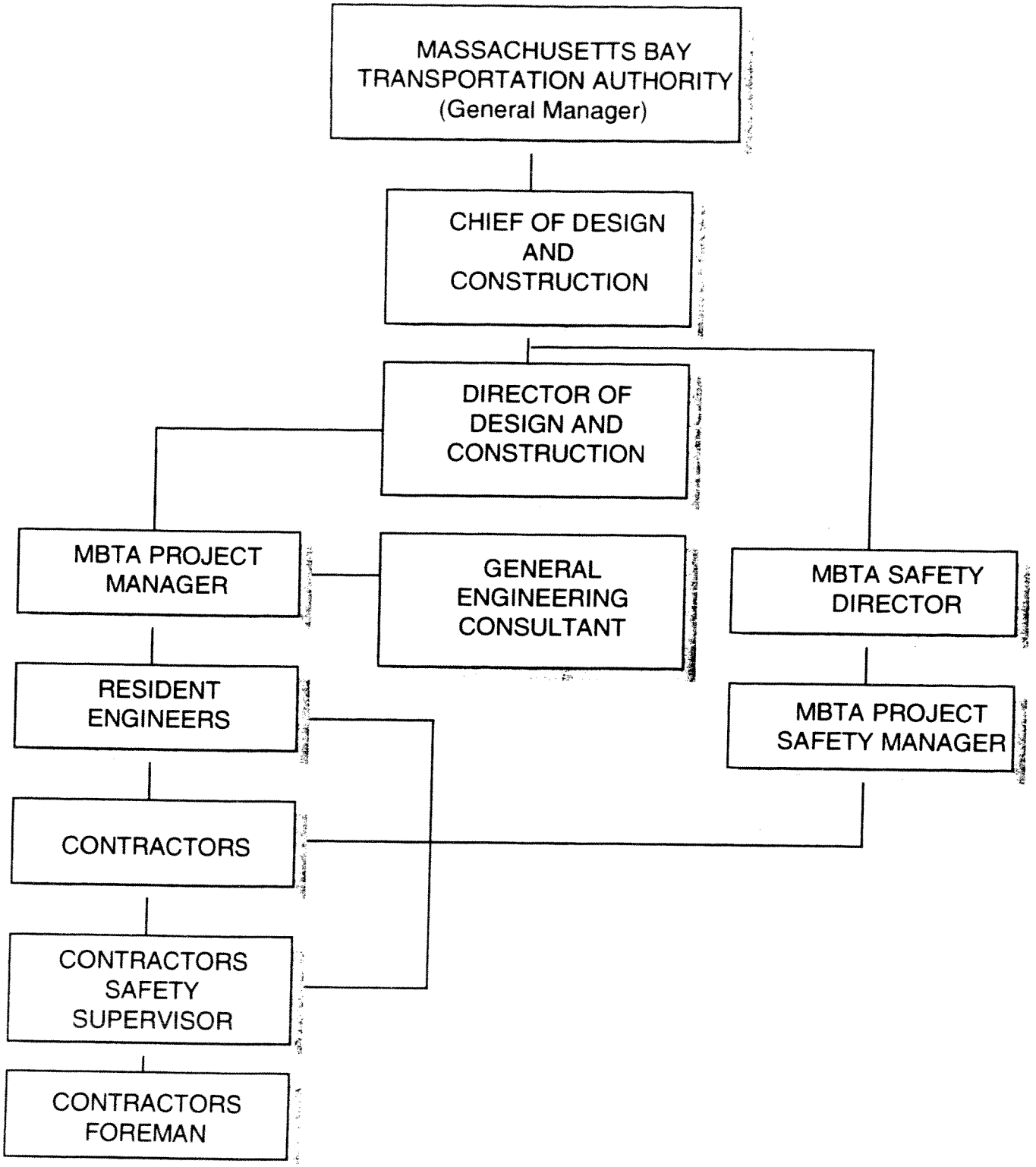
6. In the event of imminent danger requiring immediate corrective action(s). The MBTA, through its designated representative(s), is authorized to order a work stoppage until such time as the condition is corrected.

7. Arranging for or conducting safety training for both contractor and MBTA personnel.

f. Resident Engineer

The MBTA Resident Engineer provides on-site leadership to assigned inspection staff to determine that the construction work is accomplished safely and in accordance with contract plans and specifications.

CONSTRUCTION PROJECT SAFETY ORGANIZATION CHART



2.0 GENERAL SAFETY REQUIREMENTS

2.1 SUBMITTAL OF SAFETY PROGRAM AND QUALIFICATIONS

The contractor shall, within five (5) days after receipt of the award of a contract, submit for approval to the MBTA, a detailed operational Safety and Health Plan. Along with the Plan, the contractor shall submit the name and qualifications of the designated management official assigned responsibility for implementation and administration of the program. The contractor's safety supervisor shall attend MBTA Safety meetings as required. Also, the contractor shall submit its past three (3) years industrial injury/illness experience for review. Submittal of this experience may be in or obtained from OSHA Form 200. Note: Each employer is subject to record keeping requirements of OSHA 1970, thus must maintain logs and experience modification of all recordable occupational injuries and illnesses.

2.2 REQUIREMENTS

2.2.1 Emergency Action Plan

The Contractor shall establish in its safety plan procedures to handle emergencies created by the following:

a. Injuries to employees.

b. Injuries to the general public on or adjacent to the work site.

c. Property damages with particular emphasis on utilities, pedestrian and vehicular routes.

d. Fire

e. Natural disasters such as earthquakes.

f. Public demonstrations such as mobs, riots, etc.

g. Bombs or other destructive threats.

h. Hazardous material, exposures or other potential hazards that may occur at work site.

i. Severe weather, particularly lightening storms and high winds. Emergency action plans shall be compatible with local police and fire procedures. Emergency procedures shall ensure that Contractor's most senior supervisor present take charge and directs the handling of the emergency.

Emergency procedures shall be reviewed frequently to ensure that Contractor personnel are familiar with the proper actions to take, and that emergency telephone numbers are current. All emergency procedures shall be reviewed and approved by, and coordinated with the MBTA Safety Department Emergency procedures and actions required shall be discussed regularly with the Contractor's supervisory personnel and at "tool box" safety meetings.

2.2.2 First Aid Facilities

In formulating the Emergency Action Plan, the Contractor shall provide for the establishment and staffing of appropriate first aid facilities for the treatment of on the job injuries.

Off-site medical treatment of employee injuries shall be performed at medical facilities named in the Contractor's Safety Submittal.

2.2.3 Serious Accidents

Serious accidents shall be reported immediately to the MBTA Resident Engineer. Contractors shall issue standing orders to all supervisors directly in charge of operations that the scene of the accident shall not be disturbed, except for rescue or other emergency measures, until otherwise directed. Contractor's forces either witnessing or party to the accident shall be detained at the site to provide detailed accounting of facts.

2.2.4 Posting of Emergency Telephone Numbers

To ensure that emergency actions are promptly taken, Contractors shall post emergency telephone numbers in a conspicuous place(s) (all telephone locations). See Exhibit 2-2.

2.2.5 Emergency Plan Implementation

Should an emergency occur, the Contractor shall:

a. Immediately secure the area and implement the emergency action plan.

b. Notify the MBTA Resident Engineer.

c. Provide information regarding the emergency to authorized MBTA representatives only. Questions from the press and media should be referred to the Public Relations/Communications Department of the MBTA.

2.3 Protection of the Public

2.3.1 Protective Measures

All necessary precautions to prevent injury to the public or damage to property of others shall be taken. The public is defined as all persons not employed by or under contract or subcontract to the MBTA. Installation of temporary barriers and/or fencing designated to protect the public shall be reviewed and approved by the MBTA. Precautions shall include but not be limited to the following:

a. Work shall not be performed in any area occupied by the public unless specifically permitted by the contract or in writing by the MBTA

b. When necessary to maintain public use of work areas involving sidewalks, entrances to buildings, lobbies, corridors, aisles, stairways, vehicular roadways, etc., the Contractor shall protect the public in accordance with the applicable OSHA Construction Safety Standards 1926.

c. Sidewalks, entrances to buildings, lobbies, aisles, doors or exits shall be kept clear of obstructions to permit safe ingress and egress of the public at all times.

d. Appropriate warnings, signs and instructional safety signs shall be conspicuously posted where necessary. In addition, a policeman/flagperson shall control the moving of motorized equipment in areas where the public might be endangered.

e. Sidewalks, sheds, canopies, catch platforms and appropriate fences shall be provided when necessary to maintain public pedestrian traffic adjacent to the erection, demolition or structural alteration of outside walls on any structure. The protection required shall be in accordance with all applicable laws and regulations.

f. Whenever practicable, a temporary fence shall be provided around the perimeter of above ground operations adjacent to public areas except where a sidewalk shed or fence is provided by the Contractor as required by subparagraph e., above. Perimeter fences shall be at least six (6) feet high. They may be constructed of wood or metal or wood frame and sheathing, wire mesh, a combination of both, or as otherwise provided in contract documents. When the fence is adjacent to a sidewalk near a street intersection, at least the upper section of fence shall be open wire mesh from a point not over four (4) feet above the sidewalk and extending at least twenty-five (25) feet in both directions from the corner of the fence.

g. Guard rails shall be provided on both sides of vehicular and pedestrian bridges, ramps, runways and platforms. Pedestrian walkways elevated above adjoining surfaces, or walkways within six (6) feet of the top of excavated slopes or vertical banks, shall be protected with guardrails, except where sidewalk sheds or fences are provided as required by subparagraph e., above. Guardrails shall be constructed in accordance with MBTA requirements.

h. Barricades shall be provided where sidewalk shed, fences or guardrails as referenced above are not required between work areas and pedestrian walkways, roadways or occupied buildings. When a barricade is removed temporarily for the purpose of work, a policeman/flagperson shall be placed at all openings.

i. Temporary sidewalks shall be provided when a permanent sidewalk is obstructed by the Contractor's operations. Guardrails shall be provided on both sides of temporary sidewalks.

j. Warning signs and lights shall be maintained from dusk to sunrise along guardrails, barricades, temporary sidewalks and at every obstruction to the public. They shall be placed at both ends of such protection or obstructions and not over twenty (20) feet apart alongside of such protection or obstruction.

k. Fuel-burning type lanterns, torches, flares or other open flame devices are prohibited within twenty (20) feet of open utility manholes until certified safe for entry.

2.4 Group Tours and Site Visitors

2.4.1 Conduct of Tours

It is particularly important that a high degree of protection be afforded all persons on authorized tours of construction worksites. The following instruction shall be complied with, as applicable, by the Contractor and those responsible for arranging such tours. Except for technical inspection tours, made by MBTA staff members and their sponsored guests, the following procedures shall be followed:

a. Group tours must be cleared through the MBTA, allowing maximum advance notice and in compliance with MBTA Policy and Procedures.

b. MBTA will coordinate the tour arrangements and ensure notification to the Contractors Project Manager.

c. MBTA will coordinate the following with the individual or organization requesting the tour:

1. Number of Visitors - Tour groups in non-hazardous areas will be limited to no more than 10 person per tour guide.

2. Clothing - Visitors will be required to wear pants or slacks, shirt/blouse, and suitable work shoes.

3. Children - Children under 12 not permitted on tours. Children ages 12 to 15 must be accompanied by an adult.

4. Protective Equipment - Hard hats, raincoats, eye protection, earplugs, and other protective devices will be required as necessary.

5. Release and Hold Harmless Agreement - Each visitor shall be required to sign the agreement prior to the commencement of the tour. MBTA staff members and guides shall familiarize their group(s) with the hazards to be encountered on the tour prior to entering the worksite.

2.5 Substance Abuse/Prevention/Testing Program

2.5.1 The Contractor shall establish a substance abuse policy and testing program that includes the following elements:

- ☐ Deterrence
- ☐ Treatment and Rehabilitation
- ☐ Detection
- ☐ Enforcement

The MBTA reserves the right to approve the proposed substance abuse program prior to commencing the contract.

2.6 Criteria for Substance Abuse Policy and Testing Programs for Construction Contractors

Each contractor will have in place a written policy on substance abuse that emphasizes the goal of maintaining a drug and alcohol free workplace. This policy should contain minimally the following elements:

2.6.1 Deterrence

Use of drugs and alcohol while on or near MBTA property is strictly forbidden. Each employee should receive a copy of the policy on substance abuse and appraised of the requirement that he/she is expected to be drug/alcohol free when reporting for work and at all times while on or near MBTA property or while acting in any capacity as an agent of the contractor.

2.6.2 Treatment and Rehabilitation

Information regarding treatment and rehabilitation programs must be made available to employees. This can be accomplished by providing information regarding such program that are available through health insurance benefits, union health and welfare funds, Employee Assistance Programs, or community organizations. Employees are responsible for any costs related to rehabilitation or treatment that are not covered by health insurance or union health or welfare funds. Employees should be encouraged to seek help for drug and/or alcohol problems before their job performance is affected.

2.6.3 Detection

Each contractor, in order to promote and maintain a drug and alcohol free environment, will utilize a program of drug and/or alcohol screening which will be mandatory under the following conditions:

a. Pre-Employment

Prior to assignment, all contracted employees will be required to submit a drug and/or alcohol test as a condition of employment. Prior to the test, the employee must sign a release authorizing the procedure.

A urine test will screen for the presence of marijuana, cocaine, opiates, phencyclidine (PCP), amphetamines, barbiturates, benzodiazepenes, methadone, methaqualone, and propoxyphene. A blood test will screen for alcohol.

b. Probable Cause

An employee who reports to work in an unfit condition or is found to be unfit while on duty and/or who exhibits behavior which provides one (1) supervisor with probable cause that the employee is unfit for duty will be required to submit to a drug and alcohol screen. The employee will be given a urine test for marijuana, cocaine, opiates, phencyclidine (PCP), amphetamines, barbiturates, benzodiazepenes, methadone, ethoaqualone, and propoxyphene. A blood test will screen for alcohol.

c. Post Accident/Incident

Whenever any of the following occurs, the employee(s) involved will be required to submit to a drug and alcohol screen.

- Any MBTA-related event on/or involving MBTA property or personnel that results in a fatality.
- Any MBTA-related personal injury to an employee, or member of the public, which requires or should reasonably require medical attention.
- Any MBTA-related event causing significant or unusual property damage, as determined by an MBTA management official.
- Any MBTA event which appears to involve violation of Authority rules which poses a safety threat to employees or members of the public. The employee(s) in these

situations must be tested unless at the time of the accident/incident the employee's performance can be completely discounted as a contributing factor to the accident/incident. The screen should be completed immediately, but absent unusual circumstances, not more than eight (8) hours after the accident/incident in question.

In the event of hospitalization and unless medical precluded, a drug/alcohol will be ordered at the treatment facility if treatment is expected to exceed eight (8) hours.

This drug and alcohol screen will be identical to that utilized in Probable Cause.

d. Return to Work

Whenever an employee returns to work under the conditions listed below, the employee will be required to submit to a drug/alcohol screen before returning to work.

This drug and/or alcohol screen shall be required when:

The employee has previously failed a post accident/incident, probable cause, return to work or random screen.

The employee is returning from a drug and/or alcohol rehabilitation program known to or arranged by the contractor or made known to the contractor.

The employee is returning to work for any reason from an absence longer than thirty (30) calendar days. This drug and alcohol screen will be identical to that utilized in Probable Cause.

e. Random

All employees will be submitted to drug screening on an unannounced and random basis. A scientifically valid method of selection must be utilized to ensure that each employee has an equal chance of being selected.

A urine test will be used to screen for the presence of marijuana, cocaine, opiates, phencyclidine (PCP), and amphetamines.

2.6.4 Enforcement

Enforcement of the policy and testing program is essential if deterrence, treatment, and detection are to be successful. Accordingly, the use, sole or possession of illegal drugs, and use of intoxicants resulting in unfitness for duty as well as the use or possession of intoxicants on any construction site is prohibited and will result in the employee's permanent removal from the project.

a. Consequences of Positive Test Result

1. Pre-Employment

A positive drug or alcohol test result in this category will render the individual not qualified for employment on an MBTA project. The individual can reapply for employment after one (1) calendar year. However, the applicant must provide documentation that he/she has received rehabilitation/treatment for

substance abuse in order to be considered for employment after the one year period.

2. Post Accident/Incident

Any employee involved in an accident/incident who tests positive for drugs and/or alcohol will be discharged, regardless of the ultimate preventability determination or the extent of any damage or personal injury.

3. Probable Cause

Any employee who tests positive for drugs and/or alcohol pursuant to a probable cause screen will be discharged. The probable cause determination will be made by one Authority supervisor/manager.

4. Return to Work

Any employee who tests positive for drugs and/or alcohol pursuant to a return to work screen shall be suspended for forty (40) working days. During this period, he/she will be required to obtain an evaluation by a substance abuse professional (SAP). The substance abuse professional shall be an individual who is a licensed physician (medical doctor or doctor of osteopathy), or a licensed or certified psychologist, social worker, employee assistance professional or additional counselor (certified by the National Association of Alcoholism and Drug Abuse Counselors Certification Commission), with knowledge of an clinical experience in the diagnosis and treatment of drug and alcohol related disorders. The employee will be required to submit to any and all treatment recommendations made by the SAP. The cost of any recommendations made by the SAP. The cost of any recommended treatment or counseling as well as the initial evaluation by the SAP will be at the employee's own expense unless covered by health insurance or union health and welfare funds.

The employee will not return to work without documentation from the SAP that he/she has completed all treatment recommendations. In addition, the employee will be required to submit to and pass a return to work drug and alcohol screen. A second positive screen in this category will result in discharge.

5. Random

Any employee who fails a random drug screen will be subject to the disciplinary actions as outlined above under return to work.

6. Refusal to Take Test

Any employee who refuses to submit to any drug and/or alcohol test, either by word or action, will be discharged. This will include any employee who fails to provide a urine sample within a reasonable time period. However, employees who have difficulty providing a sample will be given liquids and an ample opportunity to produce a sample. This time period should not exceed two (2) hours from the time at which the employee arrived at the clinic or

hospital unless there are extenuating medical circumstances. Employees who notify their supervisor that they are ill when they have been informed or are anticipating they will be informed they are required to take a drug and/or alcohol test will be given prompt medical attention, which will also include a drug and/or alcohol test.

7. Test Tampering and/or Non-Compliance with Testing Procedures

In situations where it has been determined that an employee has tampered with his/her urine sample or an employee refuses or fails after reasonable opportunity to complete any step in the drug testing process, he/she will be discharged.

EMERGENCY

AMBULANCE_____

FIRE-RESCUE_____

HOSPITAL_____

POLICE_____

MBTA RESIDENT ENGINEER_____

ALTERNATE_____

(POSTING IS REQUIRED BY OSHA 1926.)

(EXHIBIT 2-2)

SAFETY STANDARDS

American Concrete Institute
American National Red Cross
American National Standards Institute
American Petroleum Institute
American Society of Mechanical Engineers
American Society for Testing Materials
American Welding Society
Associated General Contractors of America
Buildings Officials Conference of America
Department of Transportation
Federal Transportation Administration
E.I. DuPont de Nemours & Company
Federal Fire Council
Federal Safety Council
Industrial Hygiene Foundation of America, Inc.
Institute of Makers of Explosives
Interstate Commerce Commission
Massachusetts Division of Labor and Industries
National Bureau of Standards
National Fire Protection Association
National Safety Council
Occupational Safety and Health Act, U.S. Department of Labor
Underwriters Laboratories, Inc.
United States of American Standards Institute
Nuclear Regulatory Commission
U.S. Army, Corp. of Engineers
U.S. Department of Interior, Bureau of Mines
U.S. Government, General Services Administration
U.S. Urban Mass Transportation Administration

3.0 INSTRUCTION AND TRAINING

3.1 Basic Elements

The following areas of instruction and safety communication will promote satisfaction of the statuary as well as the Project requirements:

- Indoctrinations
- Right-of-Way Safety Awareness Assignments
- Meetings
- Personal Contact
- Specific Instruction
- Promotional Material
- Bulletin Board

3.2 Procedures

The MBTA Safety personnel are available to assist Contractor's in carrying out their accident prevention instruction and training responsibilities.

3.2.1 Indoctrination

Newly employed, promoted and/or transferred personnel shall be fully instructed in the safety practices required by their new assignments. Initial instructions for new project personnel will include discussion of the project's basic safety regulations.

3.2.2 Right-of-Way Safety Awareness

Newly employed, promoted and/or transferred personnel shall be fully instructed in the right-of-way safety practices required by their new assignments. Personnel will not be allowed on the job site unless they have attended the Right-of-Way Safety Awareness training session. They must display the Hard Hat sticker, and carry a certification card.

3.2.3 Work Assignments

All work assignments, regardless of level, should include specific instruction on safety, especially in instances where experience or the nature of the assignment indicates the possibility of personal injury or property damage.

3.2.4 Meetings

Holding properly conducted safety meetings of reasonable length is an effective means of communicating with employees. To be effective, the material presented must be specific as well as practical.

a. Operational or Progress Meetings

Whether these meetings are held at a Project or Contractor level, accident prevention shall be an agenda item and the record of these meetings should reflect the specific items discussed.

b. Crew Training Meeting

Each Foreman shall hold a weekly safety training meeting in its work area with its entire crew. These meetings often called "tool box" or "tail gate" meetings are ideally held on Monday morning and should usually last five to ten minutes. Subject matter should cover specific safety procedures pertinent to the crew's on-going activity. Following these meetings, "Report of Safety Meeting" Form (Exhibit 3-1) shall be completed. The Contractor's designated Safety Supervisor shall periodically attend and participate in these meetings.

3.2.5 Personal Contact

All levels of supervision shall make a specific effort to call to the attention of individuals under their direction, pertinent safety items relative to work. This personalized "on the spot" instruction is an extremely valuable training technique, as well as continuing indication of management's awareness and concern for safety.

3.2.6 Specific Instruction

OSHA's Construction Safety Standards require that varying degrees of training and instruction be afforded Project personnel engaged in specific areas of performance. Among the requirements listed are:

a. Unsafe Conditions (All Employees)

b. Use of Poison or Caustics (Exposed Employees)

c. Use of Flammable Liquids, Etc. (Employees Using)

d. Use of Respiratory Protection (As Required)

e. Gas Welding and Cutting (Employees Performing)

f. Arc Welding (Employees Performing)

g. Toxic Substance (Employees Using)

h. Hazardous Material Communication Program (All Employees)

3.2.7 Promotional Material

Posters and signs are useful means for wide dissemination of instruction and training. The value of both have been repeatedly demonstrated.

Basic safety signs are normally permanent while posters are temporary and should be changed frequently to maintain relevance with the changing job site environment.

3.2.8 Bulletin Board

The Contractor shall provide a bulletin board at the work site(s) in an area accessible to all employees. The Bulletin Board shall be utilized for the required OSHA and other MBTA distributed information, safety information and posters.

MBTA CONSTRUCTION SAFETY

"WEEKLY TOOLBOX SAFETY MEETING"

DATE:_____

MBTA CONTRACT NO._____

PROJECT:_____

CONTRACTOR:_____

CRAFT:_____

NO. ATTENDING:_____

TOPIC(S) DISCUSSED:

SUGGESTIONS FOR IMPROVEMENTS:

_____

FOREMAN'S SIGNATURE

_____

SAFETY REPRESENTATIVE

(EXHIBIT 3-1 (B)

ATTENDANCE ROSTER **DATE:**_____

	NAME (PRINTED)	SIGNATURE	CRAFT
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			
17.			
18.			
19.			
20.			
21.			
22.			
23.			
24.			
25.			

4.0 WORK PRACTICES CONTROL

4.1 Procedures

The techniques to be applied by the Contractor in the control of employee unsafe acts are identical to those that are utilized in the achievement of production quality and quantity control.

4.1.1 Supervisory Controls

a. Contractor - Each Contractor shall be responsible for continuous surveillance of its operations, so that he is aware of the probable sources of potential injury or loss due to unsafe acts or procedures.

b. Contractor Supervisor - The practical safety experience of project supervision must be utilized in directing the actions of those under their direction.

4.1.2 Project Controls

Frequent monitoring surveillance and audit of the performance of Contractors and its supervision will be made by MBTA Inspectors, Resident Engineers, the Project Safety Manager and/or its designated representative(s). In all instances, Contractors will be notified in writing of any serious unsafe practices observed. Failure to notify the Contractor shall not relieve the Contractor of its obligation to identify and correct unsafe practices. The Contractor's Safety Supervisor, the MBTA Project Safety Manager and other designated safety personnel shall utilize Exhibit 8-1, "Construction Safety Survey", to record unsafe practices and/or conditions. Instructions for completing Exhibit 8-1 are contained in Section 8.0.

4.1.3 Working On Or Near Third Rail

When working on or near the third rail, when the power is off, the contractor must have a third rail high-voltage warning device (Julian A. McDermott Corp. Mod RR4WL-WSAD-LI or MOD RRail-WSAD-LI-DP). This device will warn work crews if the third rail becomes energized at any time during work activity involving the right-of-way.

5.0 PHYSICAL CONDITIONS CONTROL

5.1 Procedures

5.1.1 Planning

It is an accepted principle of accident prevention that effective control of physical conditions must begin with planning. Many more serious accidents result from poor planning (or worse, lack of planning) than from any other cause. Planning, for the safety of personnel and for equipment being used, must begin with design and continue through Project completion. Contractors shall plan the safety procedures to be followed for each phase of construction. Planning meetings must include the involved Contractor, its responsible members of the MBTA's staff, and any other responsible party who may contribute to the safety of the operation.

Personnel chosen to perform any such planned operation shall be thoroughly instructed in all aspects of the procedure, including emergency actions to be taken in the event of a mishap.

5.1.2 Responsibility

The Contractor is ultimately responsible for effective performance under this section through its Superintendent or Foremen. This is because the Superintendent or Foreman has direct control of the work being performed. As such, he has the last opportunity to observe and correct any unsafe acts and/or conditions that may exist.

5.1.3 Inspections

There are a number of physical equipment inspections required by OSHA. One example is crane inspection: A "competent person" must be responsible for the regular inspection of cranes, including all wire rope. A written record of these inspections must be maintained on the site.

a. Contractor's Safety Supervisor

The Contractor shall ensure that its Safety Supervisor regularly inspects each of the work areas (including storage, office and shop facilities) to ensure compliance with MBTA and OSHA requirements. "Construction Inspection Check List", (Exhibit 5-1) is to be used on a weekly basis.

b. Crane Inspection Record

(Exhibit 5-2) and Wire Rope Inspection Record (Exhibit 5-3) are to be completed by the MBTA competent person prior to use on the job site.

c. Crane and Wire Rope Inspections

Shall be performed by the Contractor per OSHA requirements.

d. OSHA Compliance Officers

Contractors may expect periodic safety inspections from OSHA Compliance Officers. Contractors shall promptly notify the Resident Engineer whenever an OSHA Compliance Officer arrives on the Project.

e. Inspectors, Resident Engineers, Construction Project Manager, Safety Director, Project Safety Manager

Contractors may expect continuous surveillance, monitoring, and audit of the safety practices and procedures by the MBTA staff above. Full cooperation of the Contractor shall be given to correct in a timely manner any safety discrepancies noted verbally or in writing by the MBTA staff above. Surveillance, monitoring, and audits shall not relieve the Contractor of any of its safety obligations.

5.1.4 Information Exchange

The free flow and exchange of any information that may contribute to safe operations between the Contractor's Safety Supervisor and the MBTA staff is strongly encouraged.

5.1.5 Equipment and Facilities

Contractor operating equipment and facilities shall be used, inspected, and maintained as directed in this manual and as dictated by the applicable federal and state safety and health regulations. In the event of conflict the more stringent requirement will take precedence.

5.1.6 Notification of Hazards

Contractors shall notify the Resident Engineer/Project Safety Manager, in writing, of the existence of any hazardous conditions, property or equipment at the work site which are not under the Contractor's control. However, it is the Contractor's responsibility to take all necessary precautions against injury to persons or damage to property from such hazardous conditions until corrected by the responsible party.

5.1.7 Work Authorizations

The following work authorizations will be issued by the MBTA:

a. Excavation

b. Hotwork

c. Confined Space Entry

d. Crane-Suspended personnel platforms

Construction Safety Inspection Check List

Contractor: _____ Contract No._____
Jobsite Location: _____
Person in Charge: _____
Date:_____ Time:_____
Person(s) making inspection:
_____
_____
_____

		Column: A=Adequate: B=Inadequate		
		A	B	Remarks
(1)	PROGRAM ADMINISTRATION:			
	(a) Posting OSHA and other jobsite warning posters.			
	(b) Do you have safety meetings?			
	(c) Do you have job safety training, including first-aid training?			
	(d) Are there medical service and first-aid equipment, stretchers, and emergency vehicles available?			
	(e) Are jobsite injury records being kept?			
	(f) Are emergency telephone numbers, such as police department, fire department, doctor, hospital, and ambulance posted?			
(2)	HOUSEKEEPING AND SANITATION:			
	(a) General neatness of working areas.			
	(b) Regular disposal of waste and trash.			
	(c) Passageways and walkways clear?			
	(d) Adequate lighting.			
	(e) Projecting nails removed.			
	(f) Oil and grease removed.			
	(g) Waste containers provided and used.			
	(h) Sanitary facilities adequate and clean.			
	(i) Drinking water tested and approved.			
	(j) Adequate supply of water.			
	(k) Disposal drinking cups.			
	(b) Fire extinguishers identified, checked, lighted.			
	(c) Phone number of fire department posted.			
	(d) Hydrants clear, access to public thoroughfare			

		Column: A=Adequate: B=Inadequate		
		A	B	Remarks
	open.			
	(e) Good housekeeping.			
	(f) "No smoking" posted and enforced where needed.			
	(g) Fire brigades.			
(4)	ELECTRICAL INSTALLATIONS:			
	(a) Adequate wiring, well insulated.			
	(b) Fuses provided.			
	(c) Fire hazards checked.			
	(d) Electrical dangers posted.			
	(e) Proper fire extinguishers provided.			
	(f) Are terminal boxes equipped with required covers? Are covers used?			
(5)	HAND TOOLS:			
	(a) Proper tool being used for each job.			
	(b) Neat storage, safe carrying.			
	(c) Inspection and maintenance.			
	(d) Damaged tools repaired or replaced promptly. Are employee's tools inspected and repaired?			
(6)	POWER TOOLS:			
	(a) Good housekeeping where tools are used.			
	(b) Tools and cords in good conditions.			
	(c) Proper grounding.			
	(d) Proper instruction in use.			
	(e) All mechanical safeguards inuse.			
	(f) Tools neatly stored when not in use.			
	(g) Right tool being used for the job at hand.			
	(h) Wiring properly installed.			
(7)	POWER-ACTUATED TOOLS:			
	(a) Local laws and ordinances complied with.			
	(b) All operators qualified.			
	(c) Tools and charges protected from unauthorized use.			
	(d) Competent instruction and supervision.			

		Column: A=Adequate: B=Inadequate		
		A	B	Remarks
	(e) Tools checked and in good working order.			
	(f) Tools not used in any, but recommended materials.			
	(g) Safety goggles of face shields.			
	(h) Flying hazard checked by backing up, removal of personnel, or use of captive stud tool.			
(8)	LADDERS:			
	(a) Ladders inspected and in good condition?			
	(b) Properly secured to prevent slipping, sliding, or falling?			
	(c) Do side rails extend 36" above top of landing?			
	(d) Rungs or cleats not over 12" on center.			
	(e) Stepladders fully open when in use.			
	(f) Metal ladders not used around electrical hazards.			
	(g) Proper maintenance and storage.			
	(h) Are ladders painted?			
	(i) Are safety shoes in use?			
(9)	SCAFFOLDING:			
	(a) Is erection properly supervised?			
	(b) Will all structural members meet the safety factor?			
	(c) Are all connections secure?			
	(d) Is scaffold tied into structure?			
	(e) Are working areas free of debris, snow, ice, grease?			
	(f) Are foot sills and mud sills provided?			
	(g) Are workers protected from falling objects?			
	(h) Is scaffold equipment in good working order?			
	(i) Are guard rails, intermediate rails, and toeboards in place?			
	(j) Are ropes and cables in good condition?			
(10)	HOISTS, CRANES AND DERRICKS:			
	(a) Inspect cables and sheaves.			
	(b) Check slings and chains, hooks, and eyes.			
	(c) Equipment firmly supported.			

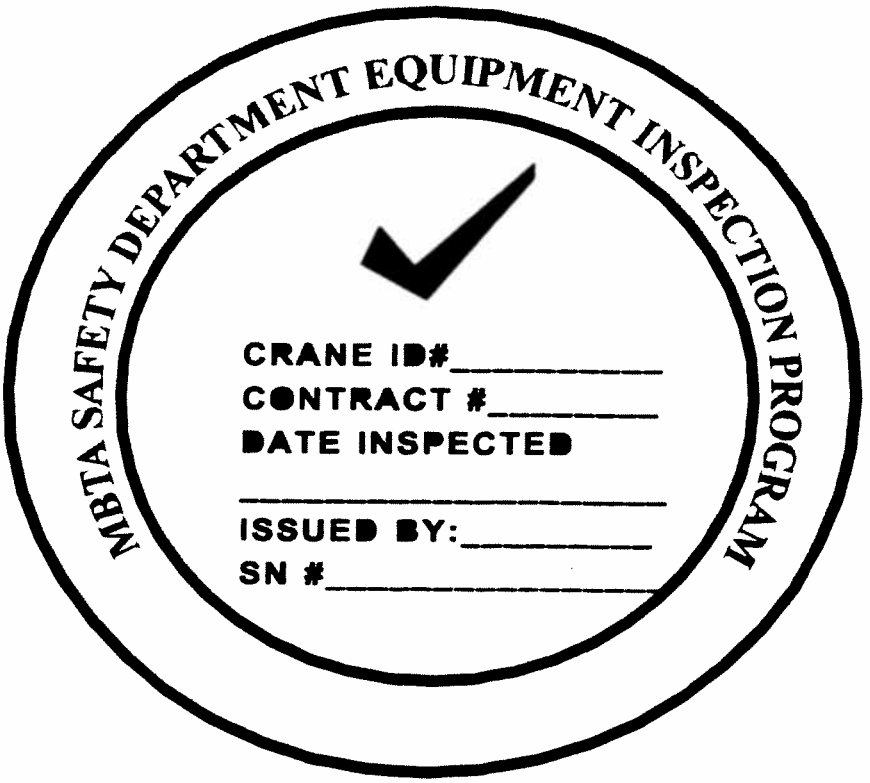
		Column: A=Adequate: B=Inadequate		
		A	B	Remarks
	(d) Outriggers used if needed.			
	(e) Power lines inactivated, removed, or at safe distance.			
	(f) Proper loading for capacity at lifting radius.			
	(g) All equipment properly lubricated and maintained.			
	(h) Signalmen where needed.			
	(i) Signals understood and observed.			
	(j) Are inspection and maintenance logs maintained?			
(11)	HEAVY EQUIPMENT			
	(a) Regular inspection and maintenance.			
	(b) Lubrication and repair of moving parts.			
	(c) Lights, brakes, warning signals operative.			
	(d) Wheels chocked when necessary.			
	(e) Haul roads well maintained and laid out properly.			
	(f) Protection when equipment is not in use.			
	(g) Are shut-off devices on hose lines in case of hose failure?			
	(h) Are noise arresters in use?			
(12)	MOTOR VEHICLES:			
	(a) Regular inspection and maintenance.			
	(b) Qualified operators.			
	(c) Local and state vehicles laws and regulations observed.			
	(d) Brakes, lights, warning devices operatives.			
	(e) Weight limits and load sizes controlled.			
	(f) Personnel carried in a safe manner - seated.			
	(g) Is all glass in good condition?			
	(h) Are back-up signals provided?			
	(i) Are fire extinguishers installed where required?			
(13)	GARAGES AND REPAIR SHOPS:			
	(a) Fire hazards.			
	(b) Dispensing of fuels and lubricants.			
	(c) Good housekeeping.			

		Column: A=Adequate: B=Inadequate		
		A	B	Remarks
	(d) Lighting.			
	(e) Carbon monoxide dangers.			
	(f) Are all fuels and lubricants in proper containers?			
	(g) Proper ventilation.			
	(h) Proper grounding and bonding.			
(14)	BARRICADES:			
	(a) Flood openings planked over or barricaded.			
	(b) Roadways and sidewalks effectively protected.			
	(c) Adequate lighting provided.			
	(d) Traffic controlled.			
(15)	HANDLING AND STORAGE OF MATERIALS:			
	(a) Are materials properly stored or stacked?			
	(b) Are passageways clear?			
	(c) Stacks on firm footings, not too high.			
	(d) Proper number of men for each operation.			
	(e) Are men lifting loads correctly?			
	(f) Are materials protected from weather conditions?			
	(g) Protection against falling into hoppers and bins.			
	(h) Is dust protection observed?			
	(i) Extinguishers and other fire protection.			
	(j) Is traffic controlled in the storage area?			
(16)	EXCAVATION AND SHORING:			
	(a) Are adjacent structures properly shored?			
	(b) Is shoring and sheathing used for soil and depth?			
	(c) Are roads and sidewalks supported and protected?			
	(d) Is material stored too close to excavations?			
	(e) Is excavation barricaded and lighting provided?			
	(f) Is equipment a safe distance from edge of excavation?			
	(g) Are ladders provided where needed?			
	(h) Are equipment ramps adequate?			

		Column: A=Adequate: B=Inadequate		
		A	B	Remarks
	(i) Is job supervision adequate?			
(17)	DEMOLITION:			
	(a) Are operations planned ahead?			
	(b) Is there shoring of adjacent structures?			
	(c) Are material chutes used?			
	(d) Is there sidewalk and other public protection?			
	(e) Clear operating space for trucks and other vehicles.			
	(f) Adequate access ladders or stairs.			
(18)	FILE DRIVING:			
	(a) Are there proper storage procedures?			
	(b) Is unloading only by properly instructed workmen?			
	(c) Are streamlines, slings, etc., in operating condition?			
	(d) Are piled riving rigs properly supported?			
	(e) Are ladders on frames?			
	(f) Are cofferdams maintained and inspected?			
	(g) Is adequate pumping available?			
	(h) Is man protection adequate?			
(19)	EXPLOSIVES:			
	(a) Qualified operators and supervision.			
	(b) Proper transport vehicles.			
	(c) Local laws and regulations observed.			
	(d) Storage magazines constructed per regulations or as recommended.			
	(e) Experienced personnel handling explosives at all times.			
	(f) Cases opened properly.			
	(g) "No smoking" posted and observed where appropriate.			
	(h) Detonators tested before each shot.			
	(i) All personnel familiar with signals and signals properly used at all times.			
	(j) Inspection after each shot.			
	(k) Proper protection and accounting for all			

		Column: A=Adequate: B=Inadequate		
		A	B	Remarks
	explosives at all times.			
	(l) Proper disposition of wrappings, waste, and scrap.			
	(m) Advise residents nearby of blasting cap damage, and inspect potential damage points.			
	(n) Check radio frequency hazards.			
(20)	FLAMMABLE GASES AND LIQUIDS:			
	(a) All containers clearly identified.			
	(b) Proper storage practices observed.			
	(c) Fire hazards checked.			
	(d) Proper storage temperatures and protection.			
	(e) Proper types and number of extinguishers nearby.			
	(f) Carts for moving cylinders.			
(21)	WELDING AND CUTTING:			
	(a) Are operators qualified?			
	(b) Screens and shields.			
	(c) Goggles, gloves, and clothing.			
	(d) Equipment in operating condition.			
	(e) Electrical equipment grounded.			
	(f) Power cables protected and in good repair.			
	(g) Fire extinguishers of proper type nearby.			
	(h) Inspection for fire hazards.			
	(i) Flammable materials protection.			
	(j) Gas cylinders chained upright.			
	(k) Gas lines protected and in good condition.			
	(l) Are cylinders caps in use?			
(22)	STEEL ERECTION:			
	(a) Safety nets or planked floors.			
	(b) Hard hats, safety shoes, gloves.			
	(c) Taglines for tools.			
	(d) Fire hazards at rivet forge and welding operations.			
	(e) Floor opening covered and barricaded.			
	(f) Ladders, stairs, or other access provided.			

		Column: A=Adequate:	B=Inadequate	
		A	B	Remarks
	(g) Hoisting apparatus checked.			
	(h) Safe man position.			
(23)	CONCRETE CONSTRUCTION:			
	(a) Forms properly installed and braced.			
	(b) Adequate shoring, plumed, and cross braced.			
	(c) Shoring remains in place until strength is attained.			
	(d) Proper curing period and procedures.			
	(e) Check heating devices.			
	(f) Mixing and transport equipment supported and traffic planned and routed.			
	(g) Adequate runways.			
	(h) Protection from cement dust and concrete contact.			
	(i) Nails and stripped form material removed from area.			
(2	MASONRY:			
	(a) Proper scaffolding.			
	(b) Masonry saws properly equipped, dust protection provided.			
	(c) Safe hoisting equipment.			
(25)	HIGHWAY CONSTRUCTION:			
	(a) Laws and ordinances observed.			
	(b) Competent flagmen properly dressed, instructed, posted.			
	(c) Adequate warning signs and markers.			
	(d) Equipment not blocking right-of-way.			
	(e) Traffic control through construction site.			
(26)	PERSONAL PROTECTION EQUIPMENT:			
	(a) Eye protection.			
	(b) Face shields.			
	(c) Respirators and masks.			
	(d) Helmets and hoods.			
	(e) Head protection.			
	(f) Gloves, aprons, and sleeves, rubber or plastic, designed to afford protection from alkalis and acids, electricians' rubber gloves with protectors.			



CRANE SAFETY INSPECTION REPORT

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

CRANE SAFETY INSPECTION REPORT

CONTRACTOR		SUB CONTRACTOR		JOB. NO.	CFSR #
ADDRESS		TELEPHONE	LOCATION	INSPECTION DATE	INSPECTION STICKER #
MANUFACTURER	CAPACITY	SER. #	MODEL #	UNIT #	TIME

OPERATOR'S INFORMATION NAME_____ LICENSE #_____ EXPIRATION DATE_____	ITEM #	SAT.	UNSAT.	N/A	DEFICIENCIES
RECORDS/SIGNS					
Current Annual Inspection Report					
Preventive Maintenance Records					
Operator's Manual/Instructions					
Marked Operator Controls					
Load Charts					
Caution or Informational Signs					
Hand Signal Chart					
High Voltage Warning Signs					
Counterweight Warning Signs					
SAFETY EQUIPMENT					
Handrails, Steps, Non-Skid Surfaces, Mirrors					
Heater/Defroster					
Windshield Wipers/Blades					
Fire Extinguisher					
Warning Devices: Back-up Alarm, Horn					
Anti-two Block System/Device					
ELECTRICAL CONTROL AND ENGINE SYSTEMS					
Electrical System					
Air Pressure System					
Hydraulic System					
Controls and Instructions: Levers, ???, Switches, Buttons and Knobs					

Holding and Locking Systems					
Indicators: Level Boom Angle Length					
Load ?? Drum Rotation Swing Boom Warning					
Engine Operation: Upperworks Carrier					
Clutch and Brake Systems, Pads					
Safety and Machinery Guards					
Muffler Exhaust System					
HYDRAULIC					
Radiator					
Boom Extension Hoses and Reel					
Hoses and Fittings					
Hoist Cylinders: Foot Pins and Seals					
Boom Sections Base Intermediate Tip					
Rollers Wear Pads					
Point Sheaves Bearings					
Cable Keepers On All Sheaves					
Jib/Extensions					
LATTICE BOOM/JIB					
Gantry Bridle or Equalizer Systems					
Foot Connections/Pins					
Automatic Boom/Hoist Kickout					
Boom Stops					
Chords					
Lacings					
Welds					
Pins Keepers Lugs					
Rollers					
Cable Keepers On All Sheaves					
Sheaves Bearings					
Jib Connections, Hinge Pins					

LUBE SYSTEMS GAUGES						
Automatic Manual Lubrication						
Fluid Levels						
Gauge/Gauge Ports						
DRUMWIRE ROPE HOOK/BLOCK ASSEMBLERS						
Glazing						
Superstructure: Frame, Cracks and Welds						
Steering System						
Lights: Head, Tail, and Brake						
Signal Indicators/Markers/Flashers						
Fuel Tank/Cap						
Tires: Condition/Pressure						
Wheel Lugs/Cylinders						
Cranes/Chains?? Sprockets, Hobbers and Pins						
Outriggers: Boxes, Beams, Cylinders						
Pads, Pins and Keepers						
Mounts, Bolts, Nuts, Rivets, and Brackets						
Muffler/Exhaust System						
Counterweight Hooks and Bolts						
Housekeeping/Toolbox or Storage Area						
Drums	Wedge Sockets					
Anchoring of Rope	Hends On Ball Swivel					
Ropes Spooling on Drums	Blocks: Sheaves, Sheave					
Boom Hoist	Bearings Guard Plates					
Pendants	Swivel, Pins, and Keepers					
Main Hoist	Hook, Tram/Throad					

Auxiliary Hoist	Hook NOT					
Whip or Jib Hoist	Safety Latch					
Rope End Fittings						

All unsatisfactory wire rope shall be replaced as per original manufacturer's recommendations.

NOTE:
As of this date _____ the unit described above has been found to be in the above condition. It is understood that this inspection does not provide?? The necessary to perform frequent and periodic inspections in conjunction with a regular maintenance program in accordance with manufacturer's specifications and/or Federal, State and local guidelines, as applicable. This inspection does not constitute a warranty or guaranty of the performance on above equipment.

EXHIBIT 5-3

MBTA

WIRE ROPE INSPECTION REPORT

CRANE NO._____ MILEAGE _____ HOURS_____ DATE INSPECTED_____

WIRE ROPE	(A) Number Broken Wires Per:	(B) Diameter reduction (wear or core damage)	(C) Kinked, Crushed, Cut, Loss of Lay, Etc.?	(D) Lubed, Corrosion, (internal or external), Heat damage?	(E) Terminal, Tackle, Blocks, Hooks, Etc.?
TYPE SIZE	(1) (2) Lay? Strand?	(1) (2) Ind. Wire Tot. Rope?			
Main Hoist (Td. Line)					
Boom Hoist (Top Lift)					
Jib Hoist (Whip Line)					
Pendants (Main)					
Pendants (150 Foot Boom)					
Jib Guys (Upper)					
Jib Guys (Lower)					

Replacement of hoisting rope shall be done in compliance with the replacement criteria by manufacturers recommendations.

INSPECTED AT LOCATION:_____ INSPECTED BY_____

COMMENTS:_____

6.0 SAFE PRACTICE STANDARDS

6.1 PROCEDURES

6.1.1 Housekeeping

A basic concept in any effective accident prevention program is "good housekeeping." No one item has a great impact on the overall success of a safety program for a construction project. The importance of good housekeeping is such that it must be planned from the beginning of the job and carefully supervised through the final cleanup.

a. During the course of construction, work areas, passageways and stairs, in an around buildings and structures, shall be kept clear of debris. Construction materials shall be stored in an orderly manner. Storage areas and walkways on the site shall be maintained free of depressions, obstructions and debris.

b. The essential elements of good housekeeping include:

1. Orderly placement of materials, tools, equipment, cords, and electric lines.

2. Placing receptacles at appropriate locations for the disposal of rubbish and debris.

3. Prompt removal and disposal of trash and waste materials.

4. Locating air and water lines, welding and burning leads, to eliminate tripping hazards.

6.1.2 Equipment Standards

Adherence to the standards listed below will aid the Contractor in the prevention of personal injury and property damage accidents.

a. Motor Vehicles

1. Each operator is responsible for the safe operation of its vehicle Drivers should make a daily inspection of the following: steering, brakes, mirrors, lights, horn, seat belts, backup alarm, tires and windshield wipers. Noted defects must be reported for prompt repair.

2. Preventative maintenance shall be regularly scheduled for all vehicles to assure their safe operating condition. All vehicles must be in compliance with federal and state requirements.

3. Trucks shall never be loaded beyond their rated capacities, or in a manner that will obscure the driver's vision. To prevent shifting or loss of material, all loads shall be securely fastened.

4. Motor vehicles shall be fueled only at established locations and by approved methods. When a vehicle is being fueled, smoking or open flames will not be permitted. Gasoline-powered equipment shall not be refueled while engine is running or hot. Gasoline will only be dispersed from approved acceptable

safety containers. Grounding straps shall be utilized during transfer of flammable liquids.

b. Material Handling Equipment (Cranes)

1. The Contractor shall notify the Resident Engineer 48 hours prior to bringing in any hoisting equipment on the Authority's property.

2. Operators are responsible for the exercise of caution necessary for the safe operation of their equipment. Operators shall immediately report unsafe conditions, including defects in the machine, to their supervisor.

3. Operators shall not permit anyone to ride the hook or load.

4. When the operator leaves its machine or repairs are being made, it is his/her responsibility to set the brakes, secure the boom, take the machine out of gear and turn off the engine.

5. When making a lift, the operator will take operational signals only from the person authorized to give them. An emergency stop signal, given by anyone, will be acted upon by the operator.

6. It is the joint responsibility of the operator and the riggers to see that all hitches are secure and that all loose material is removed before the loads are lifted.

7. Safety hooks, or properly "moused" hooks, shall be used on all operations where loads are being handled. Suspended loads shall be controlled by tag lines.

8. Booms shall be equipped with a boom angle indicator and approved boom stops. Boom heads, load blocks and hooks shall be painted with a high visibility paint.

9. Where necessary to increase stability, cranes, except crawler cranes and boom type excavators, shall be equipped with outriggers of a design and strength suitable for the work being performed. Outrigger shall be used in accordance with the manufacturers instructions.

10. Hooks, wire rope, bearings, gears, friction clutches, chain drivers and other parts subject to wear must be inspected at regular intervals and repaired or replaced as required. Records of such inspections shall be maintained by the contractor.

11. A thorough annual inspection of each crane or hoisting device shall be made by a competent person. Written records of such inspections be maintained by the contractor.

6.1.3 Electrical

a. All electrical work, installation and wire capacities shall be in accordance with the pertinent provisions of the National Electrical Code (NFPA 70-1984), unless otherwise provided by applicable regulations. (GFS or GFI's are required on all circuits)

b. All switches shall be enclosed and grounded. Panel boards shall have provisions for closing and locking the main switch and fuse box compartment.

c. Cables passing through work areas shall be covered or elevated to protect them from damage and to eliminate tripping hazards to employees.

d. Extension cords used with portable electric tools and appliances shall be heavy duty and of the three wire grounding type, and shall conform to the type and configuration required by the applicable OSHA Construction Safety Standards Part 1C.

e. Suitable means shall be provided for identifying all electrical equipment and circuits, especially when two or more voltages are used on the same job. All circuits shall be marked for the voltage and the area of service they provide.

6.1.4 "Lock-Out" "Tag-Out" Clearance Procedure

The following procedure is intended to provide a controlled method for rendering inactive electrical equipment or operating systems (including mechanical or piped) when equipment is down for any reasons, such as repair, removal or replacement of equipment and installation of new equipment.

This procedure includes the three basic phases of work on any system:

a. Shutting down equipment

b. Repairing or installing equipment

c. Start-up equipment

It is likely that some situations will not include all three phases as such; however, regardless of the operation and the phase or phases involved, the "lock-out" "tag-out" clearance procedure must be observed to ensure that safety of the operation.

It is pointed out that even though this procedure generally provides for locking and tagging of equipment, the danger tag along is to be considered a lock-out device and any equipment bearing such a tag shall not be operated under any circumstances.

Prior to starting any major operation which would involve locking and tagging procedures, a meeting should be set up involving the Contractor's Safety Supervisor and the Cognizant MBTA Representative. Specific procedures should be adopted and reviewed by all concerned with the operation prior to commencement of work

a. Shutdown of Equipment or System

1. The Foreman shall cause equipment to be shut down in a manner consistent with good operating practice.

2. The main disconnect shall be opened in addition to any remote control switches. On electrical work, it is advisable as a further precaution that the electrician shall remove all of the supply fuses. On piped hydraulic/pneumatic systems, the main valves shall be closed, pressures relieved and blocked before initiating repair or maintenance.

3. After assuring himself that the equipment has been properly shut down in accordance with prescribed procedures, the craft supervisor shall positively determine that the equipment or system has been locked and tagged as follows:

- Tags shall be affixed in a clear view (signed and dated).
- Padlocks, to which only the craft supervisor shall have access keys, shall be placed on the equipment in such a manner as to render operation of the equipment impossible.
- If a shutdown is ordered by the MBTA, custody of keys will be by the MBTA only.

b. Repair or Installation

1. Each individual craftsman assigned to the repair or installation shall attach to the equipment or system a separate standard danger tag. The tag shall be dated and signed. Tags must be legible and understandable by all authorized employees, affected employees, and all other employees whose work operations are or may be in the area in order to be effective.

2. The craft supervisor responsible for the work must assure that the equipment has been deactivated and properly tagged before permitting its personnel to perform any work.

c. Starting Up Equipment or System

1. As soon as the work is completed, the tags shall be removed only by the individuals installing them.

2. In the event the shift ends before the work is completed, the status of the work is to be reported in detail to the oncoming shift Superintendent/Manager/Supervisor and the names on the tags jointed hanged.

3. Upon completion of the work, the supervisor will make certain all worker's tags have been moved and that everyone is clear of the equipment or system. Return the equipment to normal operating conditions.

d. General

1. In an emergency, the Contractor's Project Manager/Superintendent shall have the authority to remove the tags and locks only after positively determining whether or not the equipment or system is safe for operation and that all personnel are in the clear.

2. Personnel deviating from these instructions or unauthorized persons removing danger tags shall be subject to immediate dismissal.

6.1.5 Tools

All hand tools, power tools and similar equipment, whether furnished by the Contractor or the employee, shall be maintained in a safe condition. Supervisors and craft employees shall be responsible for the inspection and repair of tools under their control. The use of many tools requires the use of a variety of personal protective equipment. See OSHA for specific requirements.

a. Hand Tools

1. Insulated or non-conducting tools should be used when working near energized electrical circuits.

2. Tool handles should be tightly fitted. Wooden handles should be carefully checked; tightened with wedges, if necessary, and replace split or splintered handles.

3. All impact tools, such as chisels, punches and wedges shall be regularly dressed to eliminate "mushrooming."

b. Power Tools

The majority of power tools accidents are caused by improper handling or poor maintenance. The following applies to all types of power tools.

1. Only authorized personnel should be permitted to operate or repair power tools.

2. Maintenance of power tools should be systematic. All worn or damaged tools should be promptly repairs or replaced. All tools should be cleaned, tested and inspected regularly.

3. Power tools shall not be used if safety equipment, such as shields, tools rests, hoods and guards have been removed or otherwise rendered inoperative.

4. Employees using tools under conditions that expose them to the hazards of flying objects or harmful dusts shall be provided with the requires personal protective equipment.

5. All electrically powered tools shall be properly grounded.

6. Gasoline powered tools shall not be used in unventilated areas. Gasoline shall be dispensed only in U.L. approved safety cans. No gasoline powered tools shall be used in the tunnel areas during revenue hours, and they must be removed prior to beginning revenue service (storage of flammable material is prohibited).

7. Portable grinders should be provided with hood type guards with side enclosures that cover the spindle and at least 50% of the wheel. All wheels should be inspected regularly for signs of fractures.

8. Bench grinders shall be equipped with deflector shields and side cover guards. Tools rests shall have a maximum clearance of 1/8 inch from the wheel.

9. Hoses supplying pneumatic tools shall have coupling secured to prevent accidental disconnection.

10. Air supply lines should be protected from damage, inspected regularly and maintained in good condition.

11. Air sources supplying hoses exceeding 1/2 inch ID shall be protected by excess flow valves to prevent "whipping" in the event of hose separation or failure.

12. The pressure of compressed air used for cleaning purposes must be reduced to 30 psi or less (does not apply for cleaning for forms, etc.).

13. The use of compressed air for cleaning purposes is encouraged, so as to reduce the employee exposure to potential airborne contaminants.

c. Powder-Actuated Tools

1. Only employees who have furnished evidence of having been trained in its use shall be allowed to operate a powder-actuated tool. Eye protection shall be worn by all personnel using the tool.

2. Tools shall not be loaded until just prior to use. Loaded tools shall not be left unattended.

3. Tools shall not be used in an explosive or flammable atmosphere. Cartridges (powder source) shall be kept separated from all other material.

4. Powder actuated tools used on this project shall meet all applicable requirements of ANSI A10.3-1970.

6.1.6 Welding and Cutting

a. Welding

1. A suitable, approved fire extinguisher shall be available for instant use in locations where welding is done. Screens, shields or other safeguards should be provided for the protection of personnel or materials below or otherwise exposed to sparks, slag, falling objects or the direct rays of the arc.

2. The welder shall wear approved eye, head protection, gloves and respirators if required. Persons assisting the welder shall wear protective glasses and respirator if required.

3. Electric welding equipment, including cable, shall meet the requirements of the National Electric Code. Welding practices shall comply with all applicable regulations.

b. Burning or Cutting

1. When gas cylinders are stored, moved or transported, the valve protection cap shall be in place.

2. When cylinders are hoisted, they shall be secured and upright in an approved cage or basket.

3. All cylinders shall be stored, transported and used in an upright position. If the cylinder is not equipped with a valve wheel a key shall be kept on the valve stem while in use. Gas cylinders must be stored 20 feet from propane.

4. An approved fire extinguisher shall be readily available in the event of fire.

5. Appropriate personal protective equipment, such as burning glasses, shields and/or gloves must be used.

6.1.7 Ladders

a. Manufactured Ladders

Manufactured ladders on the project shall comply with the regulations of ANSI A14.1-1990, Safety Code for Portable Wood Ladders or ANSI A14.2-1990, Safety Code for Portable Metal Ladders are required by OSHA.

1. Ladders with broken or missing rungs, broken or split side rails, or otherwise damaged, shall not be used.

2. All portable ladders shall be equipped with non-skid safety feet and shall be placed on a stable base. The access areas at the top and bottom of ladders shall be kept clear.

3. The side rails shall extend 36 inches above the landing. When this is not practical, grab rails shall be installed. All ladders in use shall be tied, blocked or otherwise secured to prevent accidental displacement.

b. Job Made Ladders

1. Job made ladders shall be fabricated in compliance with OSHA 1926 Subpart X.

2. The general rules applying to the use of manufactured ladders also apply to the use of job made ladders.

6.1.8 Scaffolding

a. 1. Scaffolds should be designed, built and inspected by competent persons. To avoid the use of makeshift platforms and scaffolding, each job should be carefully planned to assure that scaffolding is used where required and that such scaffolding conforms to its length and be made of at least 2 inch by 4 inch stock or its equivalent.

2. Guard rails shall be installed on all open sides and ends of platforms more than six feet (6') above the ground or floor and shall be approximately forty two inches (42") high. Guard rails shall be made of lumber not less than two inches (2") by four inches (4") material.

3. The midrail shall be halfway between the top rail and the floor, runway, platform or ramp. The ends of the rail shall not overhang the terminal posts except when it does not constitute a projected hazard. The midrail shall be made of at least 1 inch by 6 inch stock or its equivalent.

4. The toeboard, 4 inch minimum height, shall be securely fastened in place.

5. Wooden Railing Posts (verticals) shall be made of at least 2 inch by 4 inch stock or its equivalent, and be spaced so as not to exceed 8 feet on center.

b. Other types, sizes and arrangements of railing construction are acceptable, provided they meet the following requirements:

1. A smooth surfaced top rail approximately 42 inches above the floor.

2. A strength to withstand the minimum of 200 lbs. applied within two inches (2") of the top edge in any downward or outward direction at any point along the top edge

3. For specific material requirements, refer to current OSHA Standards 1926 Subpart L.

c. Stair Railings

A stair railing shall be constructed similar to a standard railing, but the vertical height shall be not more than 34 inches nor fewer than 30 inches from the top rail to the surface of the tread in line with the face of the riser at the forward edge of the riser. All hand rails shall be provided with a clearance of approximately three inches (3") between the hand rail and any other surface or object.

d. Covered Floor Opening

Floor opening covers shall be capable of supporting the maximum intended load and so installed as to prevent accidental displacement. Covers on larger floor openings shall be distinctively marked.

e. Stairways

During construction, stairs shall be provided on all structures that are two or more floors or more than 20 feet in height.

1. Stairway placement should follow as soon as practical.

2. All parts of stairways shall be free of hazardous projections. Debris and other loose material shall not be allowed to accumulate on stairways.

3. Permanent steel stairways having hollow pan type treads and landings that are to be used prior to concrete placement shall have the pans filled with solid material to the level of the nosing.

4. Temporary stairs shall have a landing not fewer than 30 inches wide, in the direction of travel, for every 12 feet of vertical rise. Wooden treads for temporary service shall be full width.

5. Riser height and tread width shall be uniform throughout any flight of stairs.

6.1.9 Concrete and Concrete Forms

All equipment and materials used in concrete construction and masonry work shall meet the applicable requirements as prescribed in ANSI A10.9-1970 "Safety Requirements for Concrete Construction and Masonry Work."

a. Employees working more than 6 feet above any adjacent working surface, placing reinforcing steel in walls, piers, columns, etc. shall be provided with fall protection such as a safety harness or equivalent device

b. Employees shall not be permitted to work above vertically protruding reinforcing steel unless such steel has been protected to eliminate the implement hazard.

c. The riding of concrete buckets for any purpose shall be prohibited.

6.1.10 Floor and Wall Openings

To control conditions where there is danger of employees of materials falling through floor, roof or wall openings, such openings shall be protected by standard railings and toeboards or covered over as follows:

a. A standard railing shall consist of a top rail, intermediate (midrail) rail, toeboard and posts.

1. The top rail shall be approximately 42 inches from the upper surface of the rail to the floor, platform or ramp level. The top rail shall be smooth surfaced throughout.

6.1.11 Steel Erection

a. Permanent floors shall be installed as soon as practical following the erection of structural members. At no time shall there be more than four floors or 48 feet of unfinished bolting or welding above the foundation or uppermost secured floor.

b. Temporary Flooring

1. The erection floor shall be solidly planked over its entire surface except for access openings. Planking shall be not fewer than 2 inches thick, full size undressed, and shall be laid tight and secured against movement.

2. On structures not adaptable to temporary floors, safety nets shall be installed and maintained whenever the potential fall distance exceeds two stories or 25 feet.

3. A safety railing shall be installed, approximately 42 inches high, around the periphery of all temporary planked floors during structural steel erection.

c. General Requirements

1. Bundles of sheets or small material shall be so secured as to prevent their falling.

2. When setting structural steel, each piece shall be secured with not fewer than two bolts at each connection and drawn up wrench tight before the load is released.

3. 100% full protection is a mandatory project requirement. Avoid walking on the top flange of beams. Beams must be "cooned", using the lower flange. When engaged in work from a fixed position, a safety harness shall be used.

4. When loads are being hoisted, avoid walking under the lift or permitting an employee to be exposed to the swing of the lift.

5. A tag line shall be used to control all loads.

6. For the protection of other crafts on the project, signs shall be posted in the erection area, "Danger Men Working Overhead."

6.1.12 Excavations, Trenching and Shoring

a. The determination of the angle of repose and design of the supporting system shall be based on careful consideration of the following: depth of the cut; anticipated changes in the soil due to air, sun and water; and ground movement caused by vehicle vibration of blasting, and earth pressures.

b. Trenches 5 feet and over in depth shall be shored or walls cut back to protect employees from cave-ins.

c. Ladders or other means of egress shall be provided in each excavation. No more than 25 feet of lateral travel shall be required to reach any such ladder.

d. Soil piles must be kept back 2 feet from excavation.

e. Contractor must ensure that at a minimum for any excavation or open trench on MBTA property, a snow fence must be installed and maintained by the contractor at all times. Caution tape on any open excavation is not a sufficient barrier.

6.1.13 Personal Protection Equipment

This section establishes the minimum requirements of personal protective equipment to be used. Only equipment complying with OSHA Safety Standards shall be used. All Contractors shall be responsible for the compliance by their employees. The Contractor's Safety Coordinator shall make regular field inspections to audit compliance.

a. Head Protection

Hard hats shall be mandatory. Hard Hats shall meet the requirements of ANSI Z89.1 or ANSI Z89.2, as appropriate, as specified by OSHA 1926 Subpart E.

b. Eye Protection

When working on or visiting the project, all employees or visitors shall wear eye protection. Eye and face protection shall meet the requirements of ANSI Z87.1 as specified by OSHA 1926 Subpart E.

c. Respiratory Protection

Respiratory protection devices approved by the National Institute of Occupational Safety and Health (NIOSH) shall be supplied by the Contractor and worn by all employees when exposed to hazardous concentrations of toxic or noxious dust, fumes or mists as required by OSHA regulations.

d. Hearing Protection

Approved hearing protection shall be made available by Contractors, and such protection shall be worn by all employees exposed to sound levels in excess of OSHA's Permissible Exposure Limits (PEI).

e. Safety Harnesses

Safety harnesses meeting OSHA safety standards shall be made available by the contractor and shall be worn by all employees exposed to falls from and unprotected height of six feet or more. Safety harness lanyards shall be a minimum of 1/2 inch nylon or equivalent with a maximum length to provide for a fall of no greater than six feet.

f. Safety Shoes

While the Contractor may not be responsible for furnishing safety shoes to its employees, the Contractor is required to assure that its employees wear suitable work shoes on the project. No tennis, canvas shoes of any kind will be permitted.

g. Other Personal Protective Equipment

Other such required equipment to be used under unusual circumstances, such as high temperature work, handling corrosive liquids, etc., not specifically covered in this section shall be reviewed with the Safety Director.

h. Maintenance

Personal protective equipment which has been altered in any manner so as to reduce its effectiveness shall be repossessed, repaired or destroyed. Personal protective equipment which has been worn or used previously shall not be reissued to another employee until the article has been cleaned and sterilized.

6.1.14 Blasting

The "Blaster's Handbook" by E.I. DuPont is an excellent guide in the use, storage and handling of explosives. Only qualified personnel shall transport, handle or use explosives. For specific blasting requirements, refer to OSHA 1926 Subpart U.

6.1.15 Fire Prevention

Fire prevention is of special importance during construction. There are considerably more hazards present during construction that will be present in the completed facility. Constant attention to the fundamentals of fire prevention is vital. The Contractor's Safety Representative shall make fire hazard inspections of the entire project on a regular basis. Immediate correction of substandard conditions is mandatory.

a. Provide sufficient quantities of portable fire extinguishers appropriate for the type of possible fire, at the work area. Where hose lines are available, connect them so they are ready for service.

b. Particular care shall be taken when welding and cutting in locations where combustibles are exposed. When such welding or cutting is done, the surrounding area must be protected with fire retardant blankets, and an adequate number of approved fire extinguishers must be immediately available.

c. The operation and maintenance of temporary heating equipment shall create no fire hazards. The use of solid fuel salamanders shall be prohibited. Clothing must not be dried by placing on or near heaters.

d. All flammable and combustible materials shall be stored, piled and handled with due regard to their fire characteristics. Flammable liquids must be stored in an approved manner, and dispensed only in acceptable safety containers. Welding gases shall be stored and segregated by type of gas. Lumber should be stacked in small piles that are interspersed with wide aisles. Lumber storage should be as far as possible from any structure.

e. Temporary shacks or similar structures shall be constructed of fire resistant materials.

f. Rubbish and debris shall not be allowed to accumulate.

6.2 HOT WORK REQUIREMENTS

6.2.1 Description

This section specifies "Hot Work" fire control procedures for Contractors and their personnel, including cutters, welders and operators of heating equipment. Hot Work is any work that utilizes or produces an ignition source.

6.2.2 Submittals

a. Perform "Hot Work" operations as follows:

1. Ensure the safe handling of "Hot Work" equipment and the safe use of the particular "Hot Work" process.

2. Determine the combustible materials and hazardous areas present or likely to be present in the work locations.

3. Protect combustibles from ignition by the following.

   a. Have work moved to a location free from dangerous combustibles.

   b. If the work cannot be moved, have the combustibles moved to a safe distance from the work or have the combustible properly shielded against ignition.

4. Give notice to the Project Office of the need to perform "Hot Work" operations and secure authorization from the Resident Engineer and the local fire department as applicable.

5. Ensure that the cutter or welder secures his or her supervisory's approval that conditions are safe before going ahead with the work.

6. Ensure that fire protection and extinguishing equipment are properly located at the site.

7. Where fire watchers are required, see that they are available at the site.

8. Procure all required permits.

b. Ensure the worker handles the "Hot Work" equipment safely and uses it so as not to endanger lives or property and:

1. Has the approval of his or her supervisor and the MBTA Project Office starting any "Hot Work";

2. Does not perform any "Hot Work" where conditions are not safe;

3. Continues to perform "Hot Work" only so long as conditions are unchanged from those under which approval was granted.

6.2.3 Fire Prevention Precautions

Permit "Hot Work" only in areas that are or have been made firesafe. Within the confines of a building or other enclosed structure, perform cutting and welding operations preferably in a specific area designed or approved for such work, such as a maintenance shop or a detached outside location. Ensure that such areas are of non-combustible or fire-resistant construction, essentially free of combustible and flammable contents, and suitably segregated from adjacent areas. When work cannot be moved practicably, as in most construction work, make the area firesafe by removing combustibles or protecting combustibles from ignition sources.

a. Do not permit "Hot Work" in the following situations:

1. In areas not authorized by the MBTA;

2. In sprinklered buildings while such protection is impaired;

3. In the presence of explosive atmospheres (mixtures of flammable gases, vapors, liquids or dusts with air), or explosive atmospheres that may develop inside uncleaned or improperly prepared tanks or equipment which have previously contained such materials, or that may develop in areas with an accumulation of combustible dusts;

4. In areas near the storage of large quantities of exposed, readily ignitable materials such as bulk sulphur, baled paper or cotton.

b. Before "Hot Work" is permitted, the Resident Engineer will give notification authorizing the "Hot Work" and designate precautions to be followed. He will have designated MBTA personnel to inspect the work area for fire safety, as indicated herein, and which personnel will complete a "Hot Work" check off list. The Resident Engineer will also assure himself of the following:

1. The "Hot Work" equipment to be used is in satisfactory operating condition and in good repair.

2. Where there are combustible materials such as paper clippings, wood shavings or textile fibers on the floor, sweep the floor clean for a radius of 35 feet. Keep combustible floors wet, covered with damp sand, or protected by fire-resistant shields. Where floors have been wet down, protect personnel operating arc welding or cutting equipment from possible shock.

3. Where practicable, relocate combustibles at least 35 feet from the work site. Where relocation is impracticable, protect combustibles with flame-proofed covers or otherwise shield with metal or fire-resistant guards or curtains. Secure edges of covers at the floor so they are tight to prevent sparks from going under them. This precaution is also important at overlaps where several covers are used to protect a large pile.

4. Tightly cover wall or floor openings or cracks within 35 feet of the site to prevent the passage of sparks to adjacent areas.

5. Suitably protect or shut down ducts and conveyor systems that might carry sparks to distant combustibles.

6. Where "Hot Work" is down near walls, partition, ceiling or roofs or combustible construction, provide fire-resistant shields or guards to prevent ignition. If welding is to be done on a metal wall, partition, ceiling or roof, take precautions to prevent ignition of combustibles on the other side, due to conduction or radiation, preferably by relocating combustibles. Where combustibles are not relocated, provide a fire watch on the opposite side of the work. Do not attempt welding on a metal partition, wall, ceiling or roof having a combustible covering, nor on walls or partitions of combustible sandwich-type panel construction.

7. Do not undertake to perform "Hot Work" on pipes or other metal in contact with combustible walls, partitions, ceilings or roofs if the work is close enough to cause ignition by conduction.

8. Provide sufficient quantities of portable fire extinguishers, appropriate for the type of possible fire, at the work area. Where hose lines are available, connect them so they are ready for service.

9. Suitably protect nearby personnel against heat, sparks, slag, etc.

c. Require the services of Fire Watcher whenever "Hot Work" is performed in locations where other than minor fire might develop, or where the following conditions exist:

1. Appreciable combustible material in the building construction or contents is closer than 35 feet to the point of operation.

2. Appreciable combustibles are more than 35 feet away, but are easily ignited by sparks.

3. Wall or floor openings within a 35-foot radius expose combustible material in adjacent areas including concealed spaces in walls or floors.

4. Combustible materials are adjacent to the opposite end of metal partitions, walls, ceilings or roofs, and are likely to be ignited by conduction or radiation.

Fire Watcher's responsibilities include:

1. Have fire extinguishing equipment readily available and be trained in its use.

2. Be familiar with facilities for sounding an alarm in the event of a fire.

3. Watch for fires in exposed areas, and try to extinguish them only when obviously within the capacity of the equipment available, or otherwise sound the alarm.

4. Maintain a fire watch for at least one-half hour after completion of "Hot Work" operations to detect and extinguish possible smoldering fires.

d. Where a Fire Watch is not required, make a Final Check-Up one-half hour after the completion of "Hot Work" operations to detect and extinguish possible smoldering fires.

e. Have "hot tapping" operations or other cutting or welding on a flammable gas or liquid transmission or distribution utility performed only by a crew qualified to make hot taps.

6.3 CONFINED SPACE ENTRY PROCEDURE (CSEP)

6.3.1 Purpose

This confined space entry procedure (CSEP) has been designed with the objective of preventing serious physical injury or death caused by employees attempting to perform work in confined space areas without proper testing and evaluation being performed. Contractors shall ensure that their employees and supervisors are trained in this procedure and that it is used where appropriate.

6.3.2 Confined Space Identification

A key element is CSEP is to identify areas that are considered confined spaces. A confined space is any area that:

a. has limited openings for entry and exit;

b. which may contain or produce toxic air contaminants;

c. has a high concentration of an inert gas;

d. is not intended for continuous occupancy; and

e. may have an oxygen deficient atmosphere (less than 19.5%)

Examples include, but are not limited to, storage tanks, process vessels, pits, vats, vaults, sewers, tunnels, manholes, cells, ducts, and rooms with less than proper size openings for easy access with no mechanical ventilation.

6.4 Responsibilities

Confined space areas must be evaluated prior to employee entry by supervision and/or qualified safety personnel. Once the evaluation is complete, supervision will draft its plan for ensuring that the elements of the CSEP are met.

6.4.1 Implementation and Pre-Entry Requirements

Personnel shall not enter the confined space area until the following are accomplished:

a. Lines which may convey flammable, injurious, or incapacitating substances into the space shall be disconnected, blinded or blocked off by other positive means to prevent the development of dangerous air contamination and/or oxygen deficiency within the space.

The disconnection or blind shall be so located or completed in such a manner that inadvertent reconnection of the line or removal of the blind are effectively prevented. (See lockout tagout procedures).

b. The confined space shall be emptied, flushed or otherwise purged of flammable, injurious or incapacitating substances.

c. Qualified Contractor personnel shall test the atmosphere with an approved calibrated device to determine whether dangerous contaminants and/or oxygen deficiency exists. Written records of such testing results shall be made and posted adjacent to the identified confined space. The date, time, and the name of the testing official shall also be recorded. Contractor personnel who may either be supervision of safety personnel shall perform these tests on an "as needed" basis. Records of these tests must remain a permanent record of construction site operations.

d. Where interconnected spaces are blinded off as a unit, each space shall be tested, results recorded, and the most hazardous conditions found shall govern the operation.

e. If dangerous air contamination and/or oxygen deficiency does not exist within the space, as demonstrated by the tests, entry into and work within the space may proceed subject to the following provisions:

1. Frequent testing shall be conducted to ensure that a dangerous air contamination and/or oxygen deficiency does not develop during the performance of any operation.

2. If this does occur during the operation, the requirements covered in "Confined Space Operations" shall apply.

3. Where the existence of either dangerous air contamination and/or oxygen deficiency is demonstrated by tests, existing ventilation shall be augmented by appropriate means (usually additional ventilation).

4. When additional ventilation has removed the dangerous air contamination and/or oxygen deficiency as demonstrated by additional tests (and recorded), entry into and work within the space may proceed.

f. No source of ignition shall be introduced until the implementation of appropriate provisions has ensured that dangerous air contamination due to flammable and/or explosive substances does not exist.

g. Whenever oxygen-consuming equipment such as salamanders, plumbers, torches, or furnaces and the like are to be used, measures shall be taken to ensure adequate combustion air and exhaust gas venting.

h. To the extent feasible, provision shall be made to permit ready entry and exit.

i. Where it is not feasible to provide ready exit from spaces equipped with automatic fire suppression systems employing harmful design concentrations of toxic or oxygen-displacing gases, or total foam flooding, such systems shall be deactivated. Where it is not practical or safe to deactivate such systems, the provisional of "Confined Space Operations" related to the use of self-contained breathing equipment shall apply during entry into work within such spaces.

Contractors Must Remember:

Surveillance of the surrounding areas must be considered to avoid drifting vapors from tanks, piping and swears which might adversely affect the atmosphere of the confined space, and Respirators are of no use in an oxygen-deficient atmosphere. Either an air-line respirator or self-contained breathing equipment is effective for use in an oxygen-deficient atmosphere.

6.4.2 Requirements, Confined Space Operations

Contractor personnel shall not be allowed to enter a confined space with an oxygen deficient of potentially toxic/explosive atmosphere, except for emergency or rescue personnel as directed by the Contractor's Safety Representative.

6.4.3 Entry Into and Work Within Confined Spaces

a. Tanks, vessels, or other confined spaces with side and top openings shall be entered from side openings when practicable.

Note: Side openings are those within 3 and 1/2 feet of the bottom.

b. Approved respiratory protective equipment shall be provided and worn when needed; this equipment may include self-contained breathing equipment.

c. An approved safety harness with attached line shall always be used. The free end of the line shall be at secured outside the entry opening. The line shall be at least 1/2 inch diameter and 2,000 pounds test.

d. At least one employee shall stand by on the outside of the confined space, ready to give assistance in case of emergency. At least one additional employee who may have other duties shall be within sight of call of the standby employee(s).

1. The standby employee shall have appropriate, approved respiratory equipment which may include an independent source of breathing air, and adequate communications.

2. The standby employee shall be equipped with an emergency light source.

3. A standby employee(s), protected as prescribed, may enter a confined space. In case of emergency, the employee must alert an additional employee of the pending emergency, and the standby employee's intention to enter the confined space.

e. When entry must be made through a top opening, the following requirements shall apply:

1. The safety belt shall be of the harness type that suspends a person in an upright position.

2. A hoisting device or other effective means shall be provided for lifting employees out of the space.

f. Work which involves the use of a flame, arc, sparks, or other sources of ignition is prohibited within a confined space (or any adjacent space having common walls, floor or ceiling with the confined space) which contains, or is likely to develop, dangerous air contamination due to flammable and/or explosive substances, i.e., repair of gas tanks, etc.

g. Whenever gases such as nitrogen are used to provide an inert atmosphere for preventing the ignition of flammable gases or vapors, no flame, arc, spark or other source of ignition shall be permitted unless the oxygen concentration is maintained at less than 20% of the lower explosive limit (LEL). Contractor and Subcontractor's supervision must be aware of operations of this description.

1. Atmosphere testing shall be conducted by a competent subcontract person with sufficient frequency to ensure conformance with this paragraph.

2. A written record of the results of such testing shall be made and a copy posted adjacent to the confined space.

h. Only approved lighting and electrical equipment (12 volt, explosion-proof) shall be used in confined spaces subject to dangerous air contamination by flammable and/or explosive substances.

i. Employees working in confined spaces which had contained substances corrosive to the skin or substances which can be absorbed through the skin shall be provided with, and shall be required to wear, appropriate personal protective clothing.

j. An effective means of communication between standby employees and employees in a confined space shall be provided and used whenever the provisions of confined space operations require the use of respiratory protective equipment or whenever employees inside a confined space are out of sight of the standby employee(s). All affected employees shall be trained by the Contractor in the use of such communications system. The system shall be tested before each use to confirm its effective operation.

7.0 HAZARDOUS SUBSTANCES/COMMUNICATIONS

7.1 Purpose and Scope

The purpose of this section is to establish a procedure for the identification and notification of hazardous substances as provided under the OSHA CFR 1926 Safety and Health Regulations for Construction.

7.2 General Requirements

7.2.1 Any Contractor who uses substances on the hazardous substances list to which workers might be exposed under either normal work conditions or reasonable foreseeable emergency conditions resulting from work place operations must provide those workers with the required hazardous substance information.

7.2.2 Contractors must provide their employees, upon request, information based on the Material Safety Data Sheet (MSDS) and a copy of the MSDS. (Note: MSDS must be readily available at the job site).

7.2.3 Contractors are required to train employees to work safely with hazardous substances to include informing them what an MSDS is and where they are located.

7.2.4 Contractors are required to adhere to current minimum MBTA contract work practice requirements for the removal, containment, recovery and disposal of lead based paint, and associated waste.

7.3 Reporting of Hazardous Substances

Each Contractor working on MBTA projects is required to provide the MBTA with a list of hazardous substances and copies of the MSDS that they will be using in their work site operations. Contractors are required to provide a copy of their training program to the Safety Director for review.

8.0 OCCUPATIONAL SAFETY AND HEALTH ACT 1926 SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION

8.1 OSHA

Employees must comply with current OSHA Safety Standards that apply to their type of business. All employers must meet reporting requirements and employers with eleven (11) or more employees must meet recordkeeping requirements specified in booklet "Recordkeeping Requirements Under Occupational Safety and Health Act."

8.2 Familiarization with OSHA Safety Standards

Each Contractor must be familiar with Occupational Safety and Health Act (OSHA) as it pertains to its work responsibility.

8.3 Reporting of Fatal/Serious Accidents to OSHA

All fatality cases and/or serious accidents and illness shall be reported to OSHA immediately by phone to an Occupational Safety and Health Area Office. Employers must report immediately all blasting accidents.

8.4 OSHA Poster

Part of the OSHA requirements is that each employer must post in a prominent location the "Safety and Health Protection on the Job" poster. The poster briefly states the intent and coverage of the Act. Failure to post this document is a citable offense under the Act.

EXHIBIT 8-1

CONSTRUCTION SAFETY SURVEY FORM

1. This form is required for recording any unsafe condition and/or action noted by the Contractor's Safety Supervisor, and the MBTA Safety Manager.

2. This form is primarily intended for preparation and use by the Contractor's Safety Supervisor, who is appointed to perform safety audit services in accordance with the requirements of the MBTA Construction Safety Program. Unsafe conditions and/or actions should be corrected immediately and duly reported on this form.

3. Completed copies indicating action taken and date completed shall be submitted to the MBTA Safety Project Manager.

4. This form shall also be used by the MBTA Project Safety Manager to record any unsafe action and/or condition noted. The MBTA Project Safety Manager will make known his recommendations to the Contractor's Safety Supervisor and/or Project Manager/Superintendent for immediate corrective action.

5. This form shall be used by the representatives performing safety audit services on all projects. They shall prepare this form, noting all unsafe acts and/or conditions observed during field audits. These reports shall be distributed as noted on Exhibit 8-1.

Exhibit (8.1)

CONSTRUCTION SAFETY SURVEY

Report No.:_____
Contract No.:_____
Contractor No.:_____

FILE NO.	DESCRIPTION	SAFETY REGULATION REFERENCE	ACTION AND/OR DATE COMPLETED

SURVEY MADE BY (PRINT):		DISTRIBUTION
_____ Signature _____ Title _____ Date	_____ Signature of contractor's Project Manager/Superintendent Date:_____ _____ Signature of MBTA Resident Engineer Date:_____	☐ Project Mgr./Superintendent ☐ Resident Engineer ☐ Project Safety Manager ☐ Project Risk Mgmt. Consultant ☐ MBTA Chief of Design and Construction

REPORT OF ACCIDENT OR DAMAGE TO EQUIPMENT OR PROPERTY

1. This form shall be prepared covering every accident to equipment or property.

2. The form shall be prepared from information as a result of investigation or direct reports by the person or persons involved or responsible.

3. Reports shall be completed promptly.

4. All accidents involving damage to property, including raw materials or equipment, installed equipment, motor vehicles and heavy construction equipment are reportable.

5. Investigation of alleged damage to private property:

   a. Buildings that may be affected by construction shall have been inspected by outside consultant (selected by the Risk Management Consultant and the MBTA).

   b. If, in the course of construction work, property damage occurs which is allegedly due to construction operations, this reporting procedure is to be followed.

   c. If, however, a property owner reports damage to its property, of which its compliant is the first intimation, and alleges that it is due to construction, he will probably request prompt inspection.

   d. In complying with an owner's request for report of damage allegedly due to construction work, particular care is required to see and record only the facts and to avoid expressing opinion. The owner's opinion shall be recorded as "remarks by owner.

"EXHIBIT 8-3

REPORT OF ACCIDENT OR DAMAGE TO EQUIPMENT OR PROPERTY

CONTRACTOR_____ DATE_____

SUBCONTRACTOR _____ MBTA CONTRACT NO._____
SECTION DESIGNER_____
LOCATION OF ACCIDENT)_____
EQUIPMENT INVOLVED (DESC. & SERIAL NOS.) (OWNER) _____
_____

WERE THERE PERSONAL INJURIES YES_____ NO _____
DAMAGES $_____

WITNESS TO ACCIDENT
_____
_____ WERE THEIR STATEMENT (S) OBTAINED
FROM WITNESS(ES) YES ___ NO ___
_____
_____ ARE STATEMENTS ATTACHED
YES ___ NO ___

REMARKS
_____
_____

TIME OF ACCIDENT ___A.M. ___ P.M. DATE_____

WEATHER CONDITIONS _____ TEMPERATURE _____

ROADWAY OR SURFACE_____ WET____ DRY____ ICY____ OTHER _____

IF OTHER, EXPLAIN_____

IF MORE SPACE IS REQUIRED, USE BACK OF THIS SHEET FOR ADDITIONAL INFORMATION AND SKETCHES

SIGNED_____

TITLE_____

EXHIBIT 8-4

SUPERVISOR'S REPORT OF ACCIDENT/UNUSUAL OCCURRENCE

1. This form shall be submitted by the Contractor to the MBTA Resident Engineer for each job-related accident involving any of the following:

   a. Any injury to an employee of the Contractor or any Subcontractor.

   b. Any injury to persons not directly connected with the project (including any alleged injuries reported by a member of the general public).

   Submittal shall be made as soon as possible, but in no case later than twenty-four (24) hours after the accident. Pertinent facts which are not available within the above time shall be submitted as soon as available in a supplemental report.

SAFETY DEPARTMENT
CONSTRUCTION PROJECT ACCIDENT/INCIDENT
FIRST REPORT

Project Number_____

Contract Description_____

	Name of Injured:
	Employer:
	Job Title:
Location:	Type of Accident:
Type:	Type of Injury:
Name:	Witness(es):
Person(s) Injured:	

DESCRIPTION OF ACCIDENT/INCIDENT: *(Attach additional sheets if necessary)*

PREVENTION RECOMMENDATIONS:

PREPARER'S NAME:	PREPARER'S TITLE:
PREPARER'S SIGNATURE:	PREPARER'S PHONE:

COPY TO SAFETY DEPT. FAX #(617) 222-5127 *and* CONSTRUCTION DEPT. FAX #(617) 723-1969

Forward copies of additional reports to:

MBTA Safety Department
10 Park Plaza
Room #8350
Boston, MA 02116
Attn: Mgr. Of Industrial, Construction,
Safety & Design

MBTA Design & Construction Department
10 Park Plaza
Room #6720
Boston, MA 02116
Attn: Chief of Design and Construction

SUPERVISOR'S REPORT OF ACCIDENT/UNUSUAL OCCURRENCE

1. Contract Number 2. Date of Accident - Time (AM or PM)
3. Project Section 4. Location of Accident
5. Reporting Organization 6. Contractor or Subcontractor Involved
7. Injury 8. Damage*
___Reportable ___Lost Time ___Fatal ___Fire ___Property ___Equipment
9. Injured person and address 10. Occupation of Injured
__Male __Age__Female
Employer
Address
11. Nature of Injury 12. Date stopped work 13. Date Returned
14. First aid by 15. Ambulance
16. Hospital 17. Attending Physician
18. Witnesses or persons responding, including addresses
19. Fire Department 20. Police Department
21. Equipment and/or materials involved
22. Primary cause of accident
23. Secondary cause
24. Contributing factors
25. Supervisor's corrective action Supervisor's signature
26. Project Supt.'s corrective action Project Supt.'s signature
27. Date this report *Attach a list of damaged property and/or equipment excluding motor vehicles. Indicate
Owner's names and addresses.
28. MBTA safety regulations involved Part_____Chapter_____
Par. _____
29. OSHA regulations involved Part_____ Chapter _____
Par. _____

30. Photographs attached_____

31. Sketch showing location of nearby structures, materials, equipment, etc., with approximate scale of distances.

32. Narrative description of events previous, during and immediately after the accident.

EXHIBIT 8-5

MONTHLY ACCIDENT EXPERIENCE SUMMARY

1. This form shall be submitted monthly by the Contractor to reflect the cumulative accident experience of the Contractor and each Subcontractor.

2. This report must be submitted no later than three (3) days after end of the month being reported.

3. These report forms and their completion do not, in any way, relieve the Contractor from completing OSHA Form 200 or Employers Report of Occupational Injury or Illness.

MBTA Contract No.
CONTRACTOR/SUBCONTRACTOR Name:
MONTH YEAR
REPORTING PERIOD: THROUGH

MONTHLY
ACCIDENT EXPERIENCE SUMMARY

	THIS MONTH	YEAR TO DATE	PROJECT TO DATE
Hours Worked First Aid Cases			
A. OSHA Recordable Cases B. Lost Time Cases (List each under comments) C. Days Lost			
A. OSHA Recordable Incidence Rate $\frac{\text{No. Of Recordables x 200,000}}{\text{Hours Worked}}$ B. Lost Time Incident Rate $\frac{\text{No. Of Incidents Resulting in Lost Time x 200,000}}{\text{Hours Worked}}$ C. Lost Time Severity Rate $\frac{\text{Total Days Lost x 200,000}}{\text{Hours Worked}}$			
AVERAGE MONTHLY EMPLOYEES			DAYS LOST
COMMENTS: TOTAL DAYS LOST			
Prepared By Date	PM/Superintendent Date		

OSHA RECORDKEEPING REQUIREMENTS

The following forms are required by OSHA for recordkeeping. The forms and the instructions for completing the forms are in the OSHA booklet entitled "Recordkeeping Requirements under the Occupational Safety and Health Act."

a. OSHA Form 200, Log Summary of Occupational Injuries and Illness; and

b. Employer's Report of Occupational Injury or Illness, CDLSR Form 5020 (Rev. 3); or

c. OSHA Form 101, Supplementary Record of Occupational Injuries and Illness.

Each Contractor shall be responsible for its own records. A copy of these reports shall be made available to the MBTA and to the Risk Management consultant on request.

9.0 ACCIDENT INVESTIGATION, REPORTING AND RECORDKEEPING

9.1 First Aid

All accidents/incidents which result in on-site first aid treatment shall be investigated by the Contractor's Safety Supervisor, and submit a report of accident (Exhibit 8-3) to the MBTA within twenty four (24) hours of the occurrence.

9.2 OSHA Recordable

Accidents and incidents resulting in medical treatment by a licensed physician shall be thoroughly investigated by the Contractor's Safety Supervisor and reports of Accident (Exhibit 8-3) and Workers Compensation Report completed within twenty four (24) hours.

All reports must be submitted to the MBTA. The accident investigation should generate appropriate recommendations for corrective actions to prevent recurrence of similar accidents.

9.2.1 Analysis and Corrective Action

Corrective actions can only be taken when specific factors of an accident/unusual occurrence have been accurately developed and the resulting recommendations have been disseminated to the responsible persons.

In the event of a serious accident, prompt oral reporting of the preliminary details is mandatory. See 9.4 under this section for required telephone reports.

In preparing written reports of an accident/unusual occurrence, statements and comments should be confined to objective finding of facts and determining the root cause. The Contractor's accident/unusual occurrence report, project records, progress, reports, and daily time reports may become important evidential material in any ensuing legal action. Accordingly, for the date on which a potential third party accident has occurred, it is important to be specific and accurate in describing work being performed, crew of equipment being utilized and their exact location.

9.2.2 Recordkeeping

Complete records are necessary accident prevention tools, but in addition, specific records are required by OSHA. Failure to maintain these records is a citable offense. Also, investigations, resultant reports and cumulative records are necessary for the protection of all concerned parties.

9.3 Procedures

9.3.1 Investigations and Reports

a. Exhibits 8-1 through 8-5 contain administrative instruction and report forms to be used by Contractors and Subcontractors for the following required reports

1. Construction Safety Surveys

2. Report of Accident of Damage to Equipment or Property (Exhibit 8-2)

3. Supervisors' Report of Accidents/Unusual Occurrences (Exhibit 8-3)

4. Accident Experience Summary Report (Exhibit 8-4)

5. Recordkeeping Requirements under the Occupational Safety and Health Act, Reprint 1985 (Exhibit 8-5)

9.3.2 Photographs

Photographs should be taken in conjunction with investigations of accidents involving serious personal injury, all non-project personnel injuries, substantial property damage (including motor vehicle), equipment or material failure, and all accidents that may, even remotely, involve third party action.

Photographs should be sufficient in number to adequately reflect the general area as well as pertinent details from a variety of angles. It is better to take too many than not enough. Photographs should be taken as soon as possible following the accident. Identify each print on its reverse as follows: name of injured (if equipment damage, type; if property damage, location); date of accident; photographer's initial, and time photographs taken (date if different from occurrence); direction facing, and brief description of photo.

9.4 Telephone Reports

Should a serious accident occur resulting in damage to public or MBTA property; or bodily injury to the public or employees of the MBTA, its Consultants, Contractors, or their Subcontractors, a telephone report shall be made as soon as practicable to the Resident Engineer.

SAMPLE OF
CONTRACTOR RIGHT-OF-WAY SAFETY CERTIFICATION
CARD AND HARD HAT STICKER

Number_____

THIS IS TO CERTIFY THAT

_____

HAS COMPLETED THE ROW CONTRACTOR
SAFETY AWARENESS CERTIFICATION PROGRAM

DATE:_____ INSTRUCTOR:_____

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

SAFETY POLICY/PROCEDURE

SUBJECT: CONTRACTOR SAFETY VIOLATION PROGRAM	ORIGINAL ISSUE DATE: July 1, 1996	SAFETY/POLICY PROCEDURE #: 7.3 REV 2

I. POLICY

The Authority is committed to overseeing that all projects are completed in a safe manner, without injury or losses resulting from accidents. The Safety Department is authorized to conduct workplace safety inspections to ensure contractor compliance with all applicable safety rules, regulations, and Authority requirements.

II. PURPOSE

To establish procedures for notification of and conducting safety inspections and the issuance of safety violation assessments by the MBTA Safety Department to Contractors who compromise the safety and health of the workforce and to enforce contractor compliance with applicable safety and health regulations and job safety requirements.

III. SCOPE

These procedures will apply to the Safety Department, Design and Construction Department, and all MBTA Contractors and Subcontractors. Authority-issued safety violation assessments do not relieve the contractor from any responsibility or obligation for fines or penalties levied upon the Contractor by other local, State or Federal agencies.

Definitions and Abbreviations (see MBTA Standard Specifications-Bidding and Contract Requirements and Division 1-General Requirements, dated November, 1983, and the following:)

Accident/Incident: An **accident** is an unplanned and undesirable event resulting in injury and/or loss. An **incident** is an unplanned and undesirable event that nearly results in injury or loss.

Assessment: Assessment is the monetary amount determined by the Safety Department to be paid by the Contractor for the safety violations cited.

Construction Inspector: The Construction inspector is the Authority's field representative who reports to the Resident Engineer, the Authority's representative at the Project site.

Deputy Director of Design & Construction: The Deputy or Assistant Director of Design and Construction, reports to the Director of Design and Construction, and plans, directs and oversees construction activities, methods and procedures relating to the Authority Design and Construction Projects

SUBJECT: CONTRACTOR SAFETY VIOLATION PROGRAM	ORIGINAL ISSUE DATE: July 1, 1996	SAFETY/POLICY PROCEDURE #: 7.3 REV 2

Director of Design and Construction: The Director of Design and Construction oversees and implements all MBTA Design and Construction Projects.

Director of Safety: The Director of safety is charged with overseeing Authority Safety Programs, Policies and Procedures and reports directly to the General Manager's Office.

Engineer: The General Manager of the Authority or designee acting within the scope of the particular duties entrusted to this person.

OSHA: The Occupational Safety and Health Administration under the United States Department of Labor. The OSHA Standards are used as minimum safety guidelines for Authority projects.

Project Manager: The MBTA Project Manager reports to the Deputy or Assistant Director of Design and Construction. The Project Manager has responsibility for the project's design and construction budget, cost and quality control, schedules, claims and safety compliance.

Resident Engineer: The Resident Engineer provides onsite supervision of assigned MBTA Construction Inspectors who are responsible for overseeing the Contractor's compliance with the Authority's contract plans and specifications, including Article 5.15 - Safety and First Aid Requirements, as amended.

Safety Official: The Safety Official is the MBTA's Safety Department representative who has knowledge and experience in the safety field. The Safety Official is trained in OSHA standards and in the recognition of safety and health hazards as well as the Authority's Safety Policies and Procedures. The Safety Official is authorized to issue safety violations and assessments (as approved by the MBTA Safety Director) and co-signed by the MBTA's Project Manager and/or Resident Engineer.

IV. PROCEDURES

The representatives of the MBTA Safety Department, upon presenting proper identification are authorized to:

- Enter without delay, with reasonable prior notice to the Authority's Resident Engineer, any construction site, workplace, or other areas where work is being performed for the Authority.
- Inspect and investigate, any such place of employment and all pertinent conditions, structures, machines, apparatus, devices, and to question, in confidence, any project employer, owner, operator, agent or employee.
- Issue the General Contractor the Authority's safety violation(s) notice, if applicable.

Under special circumstances, advanced notice will be given to the Authority's Project representatives. Such notice will not be less than 24 hours. The special circumstances include the following:

- Inspections that take place after regular business hours, or that require special preparation.
- Situations in which the Safety Department determines that advance notice would produce a more thorough or effective inspection.

The MBTA Safety Official conducting the site safety inspection will notify the MBTA Resident Engineer and the General Contractor's Safety Supervisor/Representative of any safety violations found before leaving the job site or within the 24 hour period of the inspection, depending on severity of the hazard.

After the Safety Official reports the finding, the MBTA Safety Director will determine whether assessments will be issued. The assessment amounts will be determined based on the violation. The Safety Official shall issue four copies of the safety violations (see Exhibit 1)

One copy will be issued to the MBTA Resident Engineer to ensure the Contractor's corrective action and safety compliance. The second copy will be issued to the General Contractor's on-site representative. The third copy will be sent by certified mail to the General Contractor's Senior Officer and/or the Contractor's Safety Director. A copy will be retained by the MBTA Safety Department, and the information will be entered into the Safety Department□s database for follow-up and record keeping purposes.

A follow-up inspection may be conducted to determine whether previously cited safety violations have been corrected. If the Contractor has failed to abate the safety violation, the Safety Official will inform that Contractor that he/she may face additional daily assessments while such failure continues or the safety violation remains unresolved. The Contractor's Senior Office and/or Safety Director will be notified by certified mail.

V. OSHA Violation Categories and Violation Assessment Table (see Exhibit II):

All violations to be determined by the sue of OSHA Regulations CFR 29 including Part 1926 and Part 1910 as amended. These Regulations will be considered as the safety guidelines, unless other more stringent safety requirements are noted in the Contract.

A. OSHA Violation Categories by Types:

- Other-than-Serious Violation--"A violation that has a direct relationship to job safety and health, but would not cause death or physical harm".
- Serious Violation--"A violation where there is a substantial probability that death or serious harm could result".
- Willful Violation---"A violation that the employer intentionally and knowingly commits. The employer is aware that a hazardous condition exists, knows that the condition violates an (OSHA) standard or other obligation of the OSHA Act, and makes no reasonable effort to eliminate it."
- Repeated Violation--"A violation of any standard, regulation, rule or order where, upon reinspection, a similar violation is found and the original citation (violation notice) has become a final order"
- Failure to Abate--"Failure to correct a prior violation may bring a civil penalty (assessment) for each day that the violation continues".

B. MBTA Assessment Ranges based on OSHA Category:

1. Other-than Serious: ($100.-$900.)
2. Serious Violation: ($1000.-$3000.)
3. Willful Violation: ($3000.-$7500.)
4. Repeated Violation: ($5000.-$9500.)

The **First** violation, shall be a written warning or, depending on the severity of the incident, could include assessment up to $3,000. The safety violation will be corrected immediately or within a time frame as noted on the Notice of Violation.

The **Second Repeat** violation, depending on the severity of the violation, will have assessments of $3,000. Up to $7500. Levied upon the General Contractor. The safety violation will be corrected immediately or within a time frame noted on the Notice of Violation.

The **Third Repeat** violation will result in an additional assessment of $5000.-$9500. Being levied upon the General Contractor and may require a formal review of the on site safety program with the

Contractor's insurer and at the Contractor's expense. That review may also require additional safety training for the General Contractor(s) personnel.

VI. DISPUTE RESOLUTION PROCESS (See Exhibit III)

The General Contractor will be held accountable for all safety violations on the Project, including those of any subcontractors on the same project. Upon receipt, by certified mail, of a violation notice with assessments, the Contractor will have a **15 calendar day period** to dispute the assessment violation which written notification must be forwarded along with the "Contractor Safety Violation Dispute Resolution Form" (Exhibit III), to the MBTA Director of Safety (State Transportation Building, 10 Park Plaza Rm. #8350, Boston, MA 02116), and a copy forwarded to the MBTA Project Office.

The MBTA Dispute Resolution Committee shall consist of the Director of Safety or designee, the Director of Design and Construction or designee, and the MBTA Project Manager. The purpose of the committee will be to determine whether the safety violation assessments will be upheld, reduced or dismissed. The dispute resolution meeting will include the General Contractor's Project Manager/Superintendent, the General Contractor's designated site safety supervisor/representative and/or the General Contractor's Corporate Safety Director.

The assessment values determined for the various safety violations will be withheld from subsequent General Contractor's monthly pay estimate request. The Final Payment for work performed will be reduced by those amounts previously assessed. Assessment funds will be used to further promote and reinforce safety and health on the job through continuous site safety reviews and training.

II. EXHIBITS:

1. Violation Notice Form
2. Violations and Assessment Values
3. Dispute Resolution Form

"EXHIBIT I"

MBTA Safety Department Safety Violation No._____

NOTICE OF SAFETY VIOLATION

Warning First Notice Second Repeat Notice Third Repeat Notice

Project Name:_____ Date:_____

Project Location:_____ Time:_____

Contract Number:_____ Weather Conditions:_____

TO: (Name of General Contractor)_____

ATTENTION OF: (Contractor Safety Supervisor/Representative:_____

General Contractor's Address:_____

THE FOLLOWING VIOLATION(S) OF SAFETY CONDITIONS(S) HAS/HAVE BEEN NOTED AND SHOULD BE CORRECTED:

STOP WORK until the violation is corrected: Immediately By_____
Description of Safety Violation(s):

_____

_____

Notice Issued by MBTA Safety Official:_____

Notice Received By:_____ Employer/Title:_____

MBTA SAFETY VIOLATION ASSESSMENT

FIRST Violation
Date:_____
Amount:_____

SECOND Repeat Violation
Date:_____
Amount:_____

THIRD Repeat Violation
Date:_____
Amount:_____

A COPY OF THIS VIOLATION NOTICE MUST ACCOMPANY THE DISPUTE RESOLUTION FORM

SAFETY VIOLATION ASSESSMENT TABLE

EXHIBIT II

OSHA CATEGORY (CFR 29 PART 1926)	SAFETY VIOLATION OCCURRENCE		
	First	2nd Repeat	3rd Repeat
GENERAL SAFETY AND HEALTH PROVISIONS	Warning Up To $3000	$3000 - $7,500	$5,000 - $9,500
OCCUPATIONAL HEALTH AND ENVIRONMENTAL CONTROLS	Warning Up To $3000	$3000 - $7,500	$5,000 - $9,500
PERSONAL PROTECTIVE & LIFE SAVING EQUIPMENT	Warning Up To $3000	$3000 - $7,500	$5,000 - $9,500
FIRE PROTECTION AND PREVENTION	Warning Up To $3000	$3000 - $7,500	$5,000 - $9,500
SIGNS, SIGNALS OR BARRICADES	Warning Up To $3000	$3000 - $7,500	$5,000 - $9,500
MATERIALS HANDLING, STORAGE, USE AND DISPOSAL	Warning Up To $3000	$3000 - $7,500	$5,000 - $9,500
TOOLS - HAND AND POWER	Warning Up To $3000	$3000 - $7,500	$5,000 - $9,500
WELDING AND CUTTING	Warning Up To $3000	$3000 - $7,500	$5,000 - $9,500
ELECTRICAL	Warning Up To $3000	$3000 - $7,500	$5,000 - $9,500
SCAFFOLDING	Warning Up To $3000	$3000 - $7,500	$5,000 - $9,500
FLOOR AND WALL OPENINGS	Warning Up To $3000	$3000 - $7,500	$5,000 - $9,500
CRANES, DERRICKS, HOISTS, ELEVATORS AND CONVEYORS	Warning Up To $3000	$3000 - $7,500	$5,000 - $9,500
MOTOR VEHICLES, MECHANIZED EQUIPMENT AND MARINE OPERATIONS	Warning Up To $3000	$3000 - $7,500	$5,000 - $9,500
EXCAVATIONS	Warning Up To $3000	$3000 - $7,500	$5,000 - $9,500
CONCRETE AND MASONRY CONSTRUCTION	Warning Up To $3000	$3000 - $7,500	$5,000 - $9,500
STEEL ERECTION	Warning Up To $3000	$3000 - $7,500	$5,000 - $9,500
UNDERGROUND CONSTRUCTION, CAISSONS, COFFERDAMS, AND COMPRESSED AIR	Warning Up To $3000	$3000 - $7,500	$5,000 - $9,500
DEMOLITION	Warning Up To $3000	$3000 - $7,500	$5,000 - $9,500
BLASTING AND USE OF EXPLOSIVES	Warning Up To $3000	$3000 - $7,500	$5,000 - $9,500
POWER TRANSMISSION AND DISTRIBUTION	Warning Up To $3000	$3000 - $7,500	$5,000 - $9,500
ROLLOVER PROTECTIVE STRUCTURES OVERHEAD PROTECTION	Warning Up To $3000	$3000 - $7,500	$5,000 - $9,500
STAIRWAYS AND LADDERS	Warning Up To $3000	$3000 - $7,500	$5,000 - $9,500
TOXIC AND HAZARDOUS SUBSTANCES	Warning Up To $3000	$3000 - $7,500	$5,000 - $9,500

"EXHIBIT III"

CONTRACTOR SAFETY VIOLATION DISPUTE RESOLUTION FORM

1. Contractor_____

2. Description of Violation: _____

_____ Violation No._____ _____

3. MBTA Contract No. _____ Date of Violation: _____

4. Contract Description: _____ Date of Notice: _____

_____

_____

5. Amount of Assessment(s): _____

6. Contractor Action Taken:

_____

7. Dispute Issues:_____

_____

_____

****

FOR DISPUTE RESOLUTION COMMITTEE COMMENTS (ONLY)

Committee Findings: _____

_____

_____

Committee Action Taken: _____

_____

_____

_____ _____

Director of Safety/Representative Date

_____ _____

Director of Design and Construction/Representative Date

_____ _____

MBTA Project Manager Date

_____ _____

Contractor Project Manager/Superintendent Date

_____ _____

Contractor Site Safety Supervisor/Representative Date

THIS FORM MUST HAVE THE ABOVE ITEMS 1-7 FILLED IN AND ACCOMPANY THE DISPUTE MEETING REQUEST

END OF SECTION

SECTION 01569

SYSTEM SAFETY CERTIFICATION

1.01 DESCRIPTION

A. This Section specifies requirements to produce a Safety Certification Report which shall certify that at the time of inspection, all Safety Critical Elements of this Contract are safe for passengers, MBTA employees, emergency responders, and the general public. The formal document also ensures that all Safety Critical Elements are in compliance with regulatory codes and agencies.

B. Final acceptance of the Safety Certification Report shall require written approval of the MBTA Chief of Safety.

C. The **System Safety Certification Program Policy**, which applies to operating systems (e.g., fire alarms, operation control centers, vent/fans, signal/power systems, vehicles, and operation plans) and construction projects (i.e., stations, facilities, rails, and bridges). Collection of all certification reports, verification of the safety and acceptance by the MBTA of all Safety Critical Elements, and the Safety Certification Report shall be the responsibility of the Contractor.

1.02 SAFETY CRITICAL ELEMENTS

A. The safety certification work covers operational safety under system safety, operational safety, and occupational safety. The project elements which are safety critical and a list of specification with inspection, report, and training requirements follows.

Spec. Section	Paragraph No.	Test Description
XXXXX	X.XX.X.X	XXXXXXXX

1.03 PROGRAM TASKS

A. The MBTA System Safety Engineer shall identify all Safety Critical Elements. The Contractor shall compile and document the safety requirements as described under Part IV, A, Task 1 of the attached System Safety Certification Policy.

B. The Contractor shall verify equipment and system elements; verify procedural system elements; verify personnel training; verify system integration; and perform safety certification for the Safety Critical Elements of this Contract as described under Part IV B through F of the attached System Safety Certification Policy.

1.04 MEASUREMENT AND PAYMENT

A. No separate measurement and payment will be made for work required under this Section. All costs in connection therein shall be considered therewith shall be considered incidental to the item or items of work to which they pertain.

MBTA SYSTEM SAFETY CERTIFICATION PROGRAM

I. INTRODUCTION

The goal of this Safety Certification Program is to certify that all practical steps have been taken to optimize the operational safety of the MBTA during and after construction, **before** the start of revenue service.

The program will be conducted by the MBTA as a self-certifying agency. The Safety Certification Program is administered by the MBTA Safety Department which reports directly to the General Manager's Office.

The program requires the support of all affected departments. The Safety Department is responsible for coordinating the documentation of all tasks that address safety critical elements. Safety Critical elements are defined as those items assessed as needed to eliminate, minimize, or control hazards, which could result in death, severe injury, or major system or public property damage. Safety certifiable elements exist in system equipment, facilities, procedures, and personnel, both individually, and as an integrated whole. (See Pages 4 & 5 for examples of certifiable elements).

Specific activities of the Certification Process include:

(a) Identification of safety requirements
(b) Verification of compliance with safety requirements
(c) Identification and resolution of non-compliances (open items).

II. PROGRAM OBJECTIVES:

The objective of the Safety Certification Program is to produce a formal document that ensures at the time of operation, a particular system is safe for passengers, employees, emergency responders, and the general public. Safety Certification verifies that the project is in compliance with regulatory codes and agencies. For example, when a train station is modernized, the Safety Certification Program will ensure that the Fire Alarm System meets the applicable state and city codes, and the MBTA will receive an occupancy permit stating the station is acceptable to the fire department. The Safety Certification Program will identify which items require certification and will verify that the contract documents incorporate safety requirements from the design stage. This program will also verify procedures/results and identify open items or work arounds.

The ultimate objective for this program is to provide overall risk reduction by systematically addressing hazards before opening for revenue service. This Safety Certification Program has already proved its importance with the opening of the Blue Line on June 24, 1995, and the New Old Colony Railroad, on September 26, 1997. The Safety Department was able to identify safety critical elements to ensure that they were addressed prior to the start of revenue service.

With this proactive program in place, we can expect positive results: a safer railroad.

III. PROGRAM SCOPE:

The Safety Certification Program covers Operational Safety only, under three different, but overlapping functional areas:

(a) **System Safety** - the application of operating, technical, and management techniques and principals to the safety aspects of a system throughout its life to reduce hazards to the lowest practical level through the most effective use of available recourses.

(b) **Fire/Life Safety** - elimination, minimization, or control of potential hazards to patrons, employees, emergency response personnel, and the general public caused by fire, smoke, explosion, or resulting in panic; and the protection of MBTA property from fire or explosion.

(c) **Occupational Safety** - elimination, minimization, or control of potential hazards to employees and emergency response personnel. (The certification process itself is concerned with the end product, the operational system elements (equipment and facilities, personnel, procedures), and the integration of these elements into one integrated and independent operation).

The following are typical Certifiable Elements:

(a) **Systemwide Elements**

1. Safe Braking
2. Automatic Train Control
3. Communications Equipment
4. Passenger Vehicles/Locomotives
5. Train Clearance
6. Running Rail/Field Welds
7. Signals
8. Grade Crossings
9. Bridges/Structures

(b) **Facility**

1. Passenger Stations
2. Layover Facilities
3. Site Security
4. Central Control
5. Maintenance Facilities

(c) **Procedural Elements**

1. Operations Rules and Procedures
2. Maintenance Rules and Procedures
3. Emergency Response Rules and Procedures
4. Personnel Training and Qualification Procedures

(d) **Personnel Elements**

1. Operations Personnel
2. Maintenance Personnel
3. Emergency Response Personnel

(e) **Integration Elements**

1. Integrated Test Procedures
2. Integrated Test Reports

3. Pre-Revenue Operations Test Procedures, including Emergency Response Scenarios
4. Pre-Revenue Operations Test Reports (e.g., grade crossing tests)

IV. PROGRAM TASKS

The program tasks described in this section comprise the overall certification process. Procedures, methodologies, checklists, work flow charts, schedules and other documentation necessary for the conduct, review and completion of tasks will be prepared under the appropriate task.

A. TASK 1 - IDENTIFICATION AND DOCUMENTATION OF SAFETY REQUIREMENTS

This task will involve the identification, compilation and documentation of safety requirements applicable to the equipment/facility and system elements shown under Section III of this plan.

Source documentation for the identification of safety requirements will include:

1. The technical specification for MBTA contract(s).
2. MBTA design and performance criteria.
3. Safety studies and analyses conducted by MBTA or consultants.
4. Pertinent Safety criteria and studies from other rail transit systems.
5. Applicable codes, standards, and regulations.

All safety requirements extracted from the technical specifications for equipment/facility element contracts and procurements will be documented on Safety Certification documents. Safety requirements extracted from source documentation, other than contract or procurement technical specifications, will be identified for resolution as open-items.

Primary emphasis will be given to identifying those safety elements that are "safety critical". Safety critical elements, as defined earlier, are those items assessed as needed to eliminate, minimize, or control hazards, which under consideration of the potentially worst critical mishap could result in death, severe injury, or major system or public property damage. However, safety codes and standards not falling within the above "safety critical" category will be included in the program so that non-critical safety elements can be verified. Safety Critical elements will be shown in **"Bold Type"** when producing a list of certifiable elements.

B. TASK 2 - VERIFICATION OF EQUIPMENT/FACILITY AND SYSTEM ELEMENTS

This task will be applicable to construction, installation, and procurement contracts appropriate to the equipment/facility element being considered. It will involve the completion of the Safety Certification elements listed in Task 1, to verify that contractors have complied with safety requirements. If non-compliance with a safety requirement is identified, it will be logged as an "open item" and tracked for resolution as described under Task 6.

C. TASK 3 -VERIFICATION OF PROCEDURAL SYSTEM ELEMENTS

Safety review and verification of MBTA operational rules and procedures and personnel training documentation will be conducted to ensure that procedural documents display contributions to certifiable levels of safety for the operational system. This task will be verified by the Safety Department.

A Safety Certification Procedures Review Log will be prepared and used to document the results. Where non-compliance with established safety requirements are found, or where new requirements are identified during reviews, they will be logged as an "open item" and tracked for resolution. (See Sample - Table 1).

D. TASK 4 - VERIFICATION OF PERSONNEL TRAINING AND QUALIFICATIONS

Verification of personnel training and qualification for operations, maintenance, and emergency response personnel will be conducted by review of personnel certification documentation provided and approved by the Operations Manager and the Chief Engineer. Verification under this task will be conditional, pending final verification under Task 5 - System Integration.

E. TASK 5 - VERIFICATION OF SYSTEM INTEGRATION

1. This task will consist of safety review and verification of:

(1) Integrated Test Procedures
(2) Integrated Test Reports
(3) Pre-Revenue Operations Test Procedures, including Emergency Response Scenarios
(4) Pre-Revenue Test Reports

2. Integrated Tests are conducted to verify the physical and/or the functional operations of equipment/facility elements that are integrated with other equipment/facility elements, subsequent to or as part of Acceptance Tests for individual equipment/facility elements. For example, when testing an elevator in a station, you must also test the emergency call system inside the elevator and at the platform at lobby levels. Integrated Test Procedures identified as required to verify the safety of operations, or the integrity of emergency response communications will be reviewed to:

(1) Verify the incorporation of safety requirements, and

(2) Verify that the procedural content, including test pre-requisites, is sufficiently consistent with the stated purpose(s) or objective(s) of the test.

Safety requirements will be extracted from pertinent source documentation listed in Task 1. Integrated Test Reports and any separate quality surveillance reports will be reviewed to verify that the safety requirements and parameters established by the approved test procedure have been met, and that any test non-compliances have been resolved.

3. Pre-Revenue Operations Tests are conducted subsequent to the completion of integrated tests, to verify the operational readiness of conditionally qualified operational personnel, emergency response personnel, and/or procedures, through simulated revenue service. Normal and abnormal operations are conducted, including emergency response scenarios. Pre-revenue operation test procedures will be reviewed to verify that the stated purpose(s) of the simulated revenue service, and the overall procedural content, are of sufficient scope and depth to display the overall operational safety status. Along with others, Safety personnel will monitor and report on the conduct of pre-revenue operations tests to:

a. Assess the effectiveness and the need for additions to, or revisions of, operational rules and procedures, or retraining of personnel.

b. Assess the effectiveness of emergency response scenarios and response activities.

Pre-revenue operations test reports, safety assessment reports and any other reports will be reviewed to verify that a certifiable level of operational safety has been demonstrated during the conduct of pre-revenue operations. Where such reports display deficiencies in operational rules or procedures, or in compliance with rules and procedures, or in the effectiveness of the conduct of emergency response procedures, each deficiency will be logged as an "open item" and tracked for resolution as described under Section IV, Task 6.

4. Pre-revenue operations tests must be completed at least 2 weeks prior to opening revenue service.

F. TASK 6 - SAFETY CERTIFICATION

This task will be conducted to verify and display, by documentation, that a certifiable level of operational safety has been achieved for the MBTA System, and will include:

1. Preparation of a chronological summary report to display and discuss the safety certification activities that have been conducted.

2. Preparation of a comprehensive list of certification documentation.

3. Preparation of an Open Item Status Report, to display the status of all open items identified during the conduct of the certification program. This report will be based on open items documented on Form SC-2. Form SC-2 will be generated by the System Safety Engineer or designee as needed.

Open items will be resolved by:

1. Corrective Action

   (1) Contract Change Order or Contract Procurement.
   (2) Resolution

   (1) Temporary Resolution - deferral or corrective action with or without a work around.

   (2) Final Resolution.

All open items will be entered on a Safety Certification Open Item Status Log which will be used to track, report on and document the resolution of each item until closed out (see sample Table 1).

4. A Safety Certification Report will be submitted to the General Manager. This report will be prepared by the Safety Department showing all initial finding(s), conclusion(s), and recommendation(s).

5. The sample Safety Certification Sheet on the next page illustrates the type of elements to be certified along with who is responsible, when a test was performed and what outstanding issues remain.

6. Safety Certification shall be complete prior to revenue service.

INTERIM SAFETY CERTIFICATION OPEN ITEM STATUS LOG
TABLE 1

ITEM NO	ELEMENT	RESPONSIBILITY	STATUS	COMMENTS
001	Track Geometry		Closed 9/24/97	letter 9/24/97
002	Track Geometry (curve analysis)		Closed 9/24/97	letter 9/24/97
003	Operator Training		Closed 9/18/97	Amtrak (engineers & spares) qualified for interim service
004	Equipment Certifications		Closed 9/19/97	Letter 6, Mo[illegible] on Locomotives 9/24/97
005	Bridge Acceptance (Main Line)		Closed 9/24/97	letter 9/23/97
006	Clearance Testing		Closed 9/19/97	letter 9/23/97 need test data for files
007	R-O-W Signage (Main Line)		Closed 9/19/97	letter 9/23/97
008	Radio Testing		Closed 9/19/97	Letter RRO 9/19/97
009	Rule Revisions		Closed 9/19/97	Letter Amtrak 9/19/97
010	R-O-W Fencing (Main Line)		Closed 9/23/97	letter 9/23/97
011	OCRR Emergency Response Plan		Closed 9/23/97	Plan received from Amtrak 9/23/97
012	CETC Training		Closed 9/19/97	Amtrak letter 9/19/97
013	Billings Rd. Ped. Overpass		Closed 9/19/97	Construction letter 9/19/97
014	Braintree Noise W[illegible]		N/A	Not safety critical
015	MHD Notification		Closed 9/18/97	Construction letter 9/8/97
016	Station Parking lot Platform Lighting		Closed 9/25/97	letter 9/23/97
017	Stairs/Railings		Closed 9/24/97	letter 9/23/97 (Work around procedure)
018	Platform Clearance		Closed 9/24/97	letter 9/23/97 H. Haywood to get test data from Amtrak
019	Pedestrian Station Crossings		Closed 9/10/97	Work around (bag and sign)
020	Inner Track Fence		N/A	Not in contract
021	R-O-W Signage Ply/Mid.		Closed 9/24/97	letter 9/23/97
022	Sperry Rail Test		Closed 9/22/97	letter 9/23/97 need weld repair data
023	Proficiency Training		Closed 9/18/97	Amtrak (engineers and spares qualified for interim service)
024	Layover Lighting-Kingston/Mid		Closed 9/24/97	letter 9/23/97
025	Layover Fire Protection System		N/A	Using trailers for interim service
026	State Permits (Layovers)		Closed 9/22/97	EPA permits on file at Safety
027	Public Grade Crossings		Closed 9/18/97	H. Haywood issued verification letter 9/24/97
028	Public Grade Crossings		Closed 9/25/97	Verification letter from A. Barry RRO received 9/25/97
029	Private Grade Crossings		Closed 9/19/97	Letters on file for each location
030	Operation Procedure for dark terr		Closed 9/19/97	RRO form "D" NORAC rules
031	Main Line Signal Testing		Closed 9/24/97	issued verification letter 9/24/97
032	Main Line Signal Testing		Closed 9/24/97	Verification letter from A. Barry RRO received 9/25/97
033	Automatic Door Procedure		Closed 9/19/97	RRO instructions 9/19/97
034	Bridge Acceptance (Ply/Mid)		Closed 9/24/97	letter 9/23/97
035	R-O-W Fencing (Ply/Mid.)		Closed 9/24/97	letter 9/23/97

DRAFT

V. PROGRAM CONDUCT, COORDINATION AND CONTROL

The Safety Certification Program will be conducted, coordinated, and controlled as an element of the overall operational readiness activity, which has been established to ensure the completion of all required MBTA contracts and tasks prior to revenue service.

a. ORGANIZATIONAL STRUCTURE AND RESPONSIBILITIES

Safety Certification Organizational Structure and Program Responsibilities are as follows:

1. The Safety Department, through its system safety engineering function, is accountable to the General Manager for the overall function, direction, coordination and control of the conduct of Safety Certification Tasks, and functional approval of certification documentation.

2. The Construction Project Manager and Operations Chief Engineer will function as the information exchange coordination point between the conduct of certification tasks and the conduct of other tasks necessary for operational readiness-status, interfaces, and any relative adverse schedule or functional impacts between certification tasks and other project tasks.

3. Safety, Construction, Railroad Operations and the Project Design Consultant will participate in the completion of safety certifiable elements list.

b. DOCUMENTATION CONTROL

All documentation used and produced during the conduct of the Safety Certification Program will be maintained by the Safety Department.

c. PERIODIC REPORTS AND REVIEWS

Two types of reports will be prepared by the Safety Department throughout the Safety Certification process.

1. Open Item Status Reports will be documented periodically, and will provide the following:

   a. Information on the progress and status of all task activities.
   b. Information on the number and descriptions of open items, and related resolution actions.
   c. Information on known or foreseeable issues that may constrain timely completion of program tasks.
   d. Task assignment and follow-up

2. A Final Summary Report will be prepared and documented after the completion of all safety certifiable items, and will provide:

   a . A summary of task activities.
   b. Task findings and conclusions.
   c. Identification of Open Items identified during a task, and related resolution actions

FORM SC-2

SAFETY CERTIFICATION
OPEN ITEM STATUS LOG

Item No._____ **System Element**_____

Source:_____

Open Item:_____

_____

Assigned Responsibility: _____

Resolve by (Date or Event):_____

Status Date:_____

Resolution Action:_____

By:_____

Resolution Documentation:_____

Approved:_____ **Date:**_____

Resolution Action:_____

By:_____

Resolution Documentation:_____

Approved:_____ **Date:**_____

SAFETY CERTIFICATION

FORM SC-3

MBTA

SAFETY CERTIFICATION
OPEN ITEM STATUS LOG
INSTRUCTIONS

Item No._____System Element_____
(Assigned by Safety) (Assigned by Safety)

Source:_____
(Of Open Item)

Open Item:_____
(Description of Open Item-State as a Safety Requirement)

_____

Assigned Responsibility:_____
(Pertinent Engineer or Manager)

Date:_____By:_____ (Assigned) (Director of Safety)

Status Date:_____Resolution Action:_____

1. Date Assigned:_____

    1. Recommended Resolution by Safety:_____

    2. Describe resolution action being taken or to be taken:_____

    By: _____Enter legible signature: _____

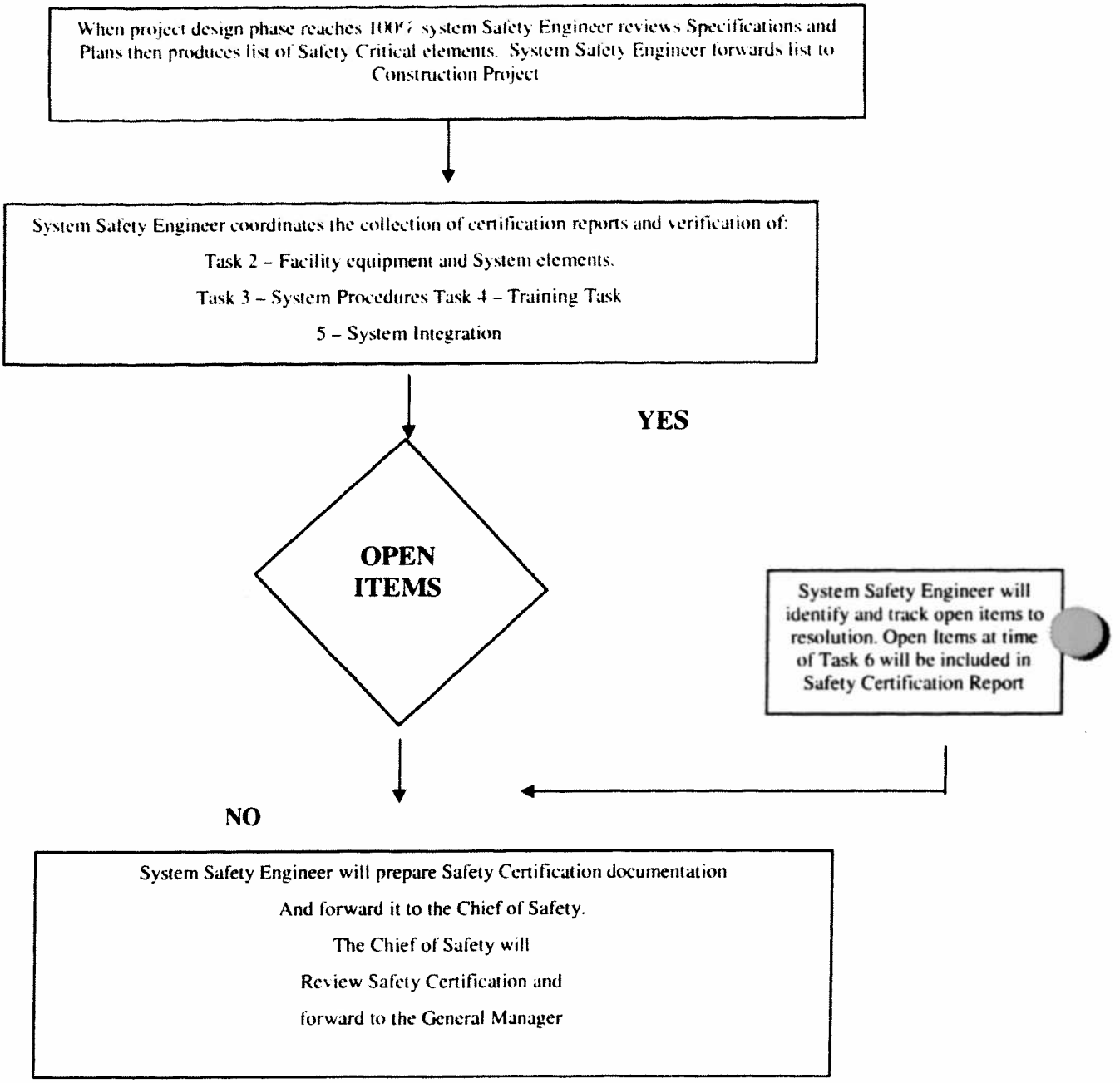
1. (System Safety Engineer)

Resolution Documentation: _____
Identify documentation that displays the resolution, i.e., drawing revision, new or revised procedure, etc.

Approved: _____Date:_____ (Chief of Safety)

FORM SC-4

SAFETY CERTIFICATION TASK FLOW CHART


When project design phase reaches 100% system Safety Engineer reviews Specifications and Plans then produces list of Safety Critical elements. System Safety Engineer forwards list to Construction Project
System Safety Engineer coordinates the collection of certification reports and verification of:
Task 2 – Facility equipment and System elements.
Task 3 – System Procedures Task 4 – Training Task
5 – System Integration
YES
OPEN ITEMS
System Safety Engineer will identify and track open items to resolution. Open Items at time of Task 6 will be included in Safety Certification Report
NO
System Safety Engineer will prepare Safety Certification documentation
And forward it to the Chief of Safety.
The Chief of Safety will
Review Safety Certification and
forward to the General Manager

END OF SECTION

SECTION 01570

TRAFFIC REGULATION

1.01 DESCRIPTION

A. This Section specifies the general requirements for traffic regulation and load restrictions in accordance with the Standard Specifications Division 1 - General Requirements Section 01570, except as modified herein.

1.04 BARRICADES, WARNING SIGNS AND OTHER PROTECTIVE DEVICES

A. Highways and city or town ways, wholly or partly closed to traffic shall be protected by suitable barricades, barrier fences, traffic signs, drums with flashers, or other traffic devices at locations within and around the construction area which present a hazard to motorists or pedestrians. The type, amount, locations, and duration of such devices will be as directed by the Engineer. No additional compensation will be made for protective devices. This work will be considered incidental to the item of work to which it pertains.

E. All barricades, barrier fences, traffic signs and other traffic devices shall conform to the current Manual on Uniform Traffic Control Devices for Streets and Highways published by the Massachusetts Highway Department.

J. The Contractor must supply signage controls to keep the existing facility operational.

1.05 TRAFFIC OFFICERS SERVICES

A. Provide such police officers as the Engineer deems necessary for the direction and control of pedestrian and vehicular traffic within the site or sites. Police officers shall wear regulation uniforms. Compensation for the services of said police officers shall be paid directly by the Contractor to the designated municipal department, at a patrolman's rate of pay, subject to all rules and regulations, ordinances or by-laws in effect in the city or town in which the work is to be performed. In carrying out work on Authority property which requires a police detail, use the services of the MBTA police when available.

E. All requests for police details shall be referred to the MBTA Police Detail Officer (Tel. 222-1270). The MBTA Police Detail Officer will arrange for the appropriate and sufficient number of details. The request shall be forwarded to the MBTA Detail Office, with a copy to the Engineer, well in advance to enable him to make the required arrangements. It is the policy of the Authority on property of the Authority to use the services of the MBTA Police for details when they are required.

1.09 MEASUREMENT AND PAYMENT

A. Except as specified above the Paragraph 1.05, no separate measurement or payment will be made for work required under this Section. All costs in connection therewith will be considered incidental to the item or items of work to which they pertain.

B. Measurement: Work specified in this Section for Traffic Officer Services will not be measured but will be paid for under an allowance for Item 0130.430. The allowance will be adjusted to the actual amount paid for all such work. The Contractor shall furnish itemized statements of the work performed and give the Engineer access to accounts, bills, and vouchers relating thereto, and unless the Contractor does furnish such itemized statements, bills, and vouchers, he shall not be entitled to payment for the related work. The allowance will be made to reimburse the Contractor for all services required for the work specified herein.

C. Payment: Payment for the work of this Section will be used on itemized statements furnished by the Contractor to the Authority without any mark-up for overhead or profit. No other costs will be paid for work of this Section.

D. Payment Item:

Item No.	Description	Unit
0130.430	Traffic Officers Services	Allowance

END OF SECTION

SECTION 01572

LIMITATIONS OF OPERATIONS

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section specifies limitations of operations regarding the Contractor's activities while working on this Project.

B. If, during the carrying out of the Work covered by this Contract, the tracks or other facilities of the Authority are endangered, the Contractor shall immediately do such work as directed by the Authority to restore safety, and upon failure of the Contractor to carry out such directions immediately, the Authority may take whatever steps as are necessary to restore safe conditions.

1. The cost to the Authority of restoring safe conditions or of any damage to the Authority's trains, tracks, or other facilities caused by the Contractor's or subcontractors' operations will be considered a charge against the Contractor and shall be paid for by him, or may be deducted from monies due or that may become due him under the Contract.

1.02 ACCESS TO AUTHORITY PROPERTY

A. The Contractor shall notify the Engineer, the office of the Design and Construction representative and the office of the Green Line Superintendent at 617-222-5982 seventy two (72) hours prior to actual entry upon the property. The Contractor shall notify the office of the Design and Construction and the Green Line Superintendent, immediately, if the job is to be closed down for a period of more than three (3) consecutive days and shall again notify the Authority as specified when the Work will recommence.

B. The Contractor shall make all necessary arrangements with the Authority before entering upon the property and perform his work in accordance with an approved work schedule. He shall execute an agreement with the Authority and shall have on the job site or produce evidence thereof, within reasonable time; such signed documents or letters of approval permitting entry for work on Authority property. Absence of such documents or letters shall cause the Authority to order the Owner or Contractor to cease all activities and remove from the property all his work forces and all his equipment, which would obstruct or endanger the safe operation of the transit system. Continuation of work by the Owner or Contractor will not be allowed until such documents or letters are made available to the Director of Design and Construction, the Director of Subway Operations, or their authorized representative.

C. The Work associated with this Project, except as specified, will be done without interruption of or change in the regular work schedule or operation of vehicles of the Authority. No work shall be done affecting the operation of vehicles or operation of stations until the Contractor has submitted details of his procedures to the Engineer, the Chief Engineer and the Chief of Green Line Operations 30 working days prior to the start of work and has secured written permission to proceed.

D. The Authority reserves the right to require work affecting the safety of its operations to be performed at prescheduled non-operating periods from approximately 1:30 AM to 5:30 AM daily (1:30 AM to 4:30 AM effective); 1:30 AM to 6:00 AM Sunday (1:30 AM to 5:30 AM effective). The Contractor will not be permitted to remain within the track right-of-way after

5:00 AM (6:00 AM Sunday). The Authority may, during emergencies or at times when the Authority work forces are required to work in the area of the Contractor's work, order the Contractor to cease work and remove his work forces and equipment from the property leaving the right-of-way in a safe operating condition. The Authority also reserves the right to stop or postpone the Contractor's or subcontractor's previously approved work during operating hours if, in the Authority's opinion, such work is being performed in a manner that will endanger the Authority's operations.

E. The Contractor shall make his own provisions for power, air line and disposal of seepage water. No use of existing Authority utilities including its drainage system will be permitted unless approved by the Authority.

F. The Contractor's attention is directed to other projects that may be ongoing simultaneously in the work area. Priorities for site access between the Accessibility Project and others will be determined by the Authority.

G. The Authority reserves the right to deny the Contractor and subcontractors access to the right-of-way because of operational requirements, adverse weather conditions or emergency track repairs. The Contractor shall reasonably expect to be denied access to the site a total of ten (10) days per calendar year. In addition, the Contractor shall also expect to have his access to the site delayed a total of four times per month. Each delay will be 60 minutes or less. Allowances shall be made for these possible events in the Bid.

H. The Contractor shall perform his work at all times so as to cause no interruption of service during operating hours and shall at all times after performing work during either operating hours or non-operating hours leave the Authority's property in a clean and safe operating condition.

I. On occasion, the Authority will operate work cars in the area of the work. At no time during these occurrences will the Contractor be allowed to work, except with the approval of the Authority or the Authority personnel providing protection services as specified.

1.03 OPERATIONAL RESTRICTIONS

A. The Contractor is made aware that its work will be performed adjacent to or over operating tracks, signal lines, communication lines, power lines, cables and other facilities belonging to the Authority. The Contractor is to take all due precautions to protect the Authority's facilities and operations during the course of his work. When in the opinion of the Chief Engineer or the Chief of Green Line Operations or their representatives, the Contractor's work would cause hazard to the Authority's facilities or to the safe operation of its transit system, the Authority will assign its own qualified personnel deemed necessary to protect its property, facilities and operations, all at the expense of the Contractor.

B. The Contractor is specifically prohibited from conducting any operations next to or over the right-of-way that have a potential to adversely impact the operation of Authority revenue service during normal operating hours (approximately 5:00 AM to 1:30 AM). Certain work in the right-of-way described below as hazardous work, may take place during restricted revenue hours at the discretion of the Chief of Green Line Operations and require flagmen present.

- One work area affecting a single track = 2 flagmen
- One work area affecting two tracks = 4 flagmen, 1 supervisor
- Two work areas affecting a single track = 2-4 flagmen, 1 supervisor
- Two work areas affecting two tracks = 4 flagmen, 1 supervisor

- Work crews on foot = 1 or 2 flagmen dependent on activity and/or location

C. The Authority will consider its property, facilities and operations fouled or subject to hazard when the following occurs:

A. When any object or operation is or can be brought nearer than 15 feet to the center line of an operating track.

B. When an object or excavation is brought nearer than 4 feet to a signal or communication line.

C. When an object or excavation is brought nearer than 10 feet to a power line or cable.

D. When explosives are used in the vicinity of its premises. Explosives shall not be used on or adjacent to the Authority's property or facilities without written consent of the Authority's Director of Design and Construction and then shall be used only by a licensed blaster, licensed in the Commonwealth of Massachusetts, at times and under conditions acceptable to the Authority.

E. When cranes, trucks, power shovels or any other equipment are working in such positions that failures with or without load could occur.

It shall be the responsibility of the Contractor to inform the Chief of Green Line Operations in writing 30 working days prior to all times when the Contractor intends to perform hazardous work as specified. Submittal shall include a site plan, the reasons for entering the property, where the property will be entered, each individual location where work of a different nature is to be performed, the nature of such work, and the number of days, including time schedule, the Contractor intends to remain on the property at each location. Failure of the Contractor to provide the Chief of Green Line Operations with the specified advance notice of hazardous work will result in the stoppage of work by the Authority.

D. The Contractor will be allowed on the right-of-way only after revenue service (approximately 1:30 AM to 5:00 AM). On occasion the Authority will operate work cars in the area of the work during non-revenue hours. At no time during these occurrences will the Contractor be allowed to work except with the approval of the Authority. The Contractor shall coordinate his schedule at least 24 hours in advance with the Authority.

E. No weekday/weekend transit service interruptions will be allowed, unless as approved by the Authority. The Contractor shall submit, in writing, to the Chief Engineer, the Chief of Green Line Operations and Bus Operations, all requests for weekend or extended hours of operation at least thirty (30) days prior to the first day of the month for which extended or weekend hours are desired. The granting of extended or weekend hours shall be entirely at the discretion of the Authority.

No work impacting Authority operations will be allowed on the following dates, holidays or special events:

New Year's Day
Patriots Day
Memorial Day
July 4th

Labor Day
Day before Thanksgiving
Thanksgiving Day
Day after Thanksgiving
Christmas Day
December 31

No weekend work impacting Authority operations will be allowed between Thanksgiving Day and New Year's Day nor the weekends associated with the running of the Boston Marathon, the Fourth of July celebration, Boston College home football games, Red Sox home games or the staging of a major event in the City of Boston.

The Contractor's requests for weekend work periods on the right-of-way, not excluded above, may be denied by the Authority for reasons other than those specified at any time during the duration of the project. The Contractor shall be aware that, on average, only one weekend per month on the right-of-way will be allowed.

F. Prior to the Contractor leaving any work site, at the completion of each work day, the Contractor shall insure that the site is in proper condition to permit normal transit operations to resume. If in the opinion of the Authority, the site is not suitable for normal transit operations due to conditions caused by the Contractor, the Authority will allocate a suitable number of its own personnel to rectify the site and the Contractor will be charged the full cost of such personnel and necessary equipment, including the full cost of replacement services during the cleanup period.

G. In the event that the Contractor does not adhere to the work period limitations and causes delay in returning the right-of-way to revenue service at the end of any work period, the Contractor shall pay the Authority for substitute bus service a sum not to exceed $120.00 per hour per bus for the entire duration of the delay and including mobilization and demobilization of the bus service. The minimum charge shall be three (3) hours per bus per delay. The Contractor shall reimburse the Authority for the hourly costs of personnel including, but not limited to, supervisors, officials, gatemen, flagmen and automotive used during such delays. The required number of buses to adequately accommodate all Authority customers who are inconvenienced by the delay shall be at the sole discretion of the Authority's Bus Operations Department. Whatever sum of money may become due and payable to the Authority by the Contractor will be considered a charge against the Contractor and shall be paid by him, or may be deducted from any monies due or that may become due him under this Contract. This requirement shall be construed and treated by the parties to the Contract, not as imposing a penalty upon the Contractor for failing fully to complete the work within the work periods as specified, but as liquidated damages to compensate the Authority for additional costs incurred by the Authority because of the failure of the Contractor to fully complete said work within the work periods specified.

H. The Contractor shall assume full responsibility for the safety of all his work. The Contractor shall perform his work in a manner that will insure the safety of personnel and the work, and prevent safety hazards and exposure to men and equipment to hazardous and potentially hazardous conditions. All work in the construction of the project shall comply with the requirements of the Authority, provisions of the Department of Labor, Occupational Safety and Health Administration (OSHA), and state and local regulations. Safe breathing levels shall conform to the Massachusetts Department of Environmental Protection (DEP) standards. In the case of conflict of regulations, the most stringent will apply.

1.04 PROTECTION SERVICES

A. When work is being performed in the vicinity of Authority rights-of-way and public areas by the Contractor, the Authority will require the Contractor to have at the work site such authorized and qualified personnel as may be required to adequately protect the Authority's customers, employees, property, facilities and operations from hazardous conditions.

B. The Authority's Director of Design and Construction, and/or the Director of Subway Operations or their authorized representative shall determine when protection services are required. When the Authority determines that protection services are required, flagging personnel or any other such personnel as may be required to ensure the safety of the Authority's operations shall be provided from the Authority's work force in such numbers as the Authority determines. No work will be allowed if flagman are required, but not on duty.

C. When it is determined that protection services are required, the Contractor shall notify the Authority 24 hours in advance and before 10:00 AM on the workday preceding the day that protection services will be required. Requests for protection services on Saturday, Sunday and/or a holiday shall be made the preceding Friday before 10:00 AM or before 10:00 AM on the workday preceding the holiday. Requests for protection services shall be directed to:

For Non-Operating hours 1:30 AM - 5:00 AM
James J. Donovan
Planning and Scheduling Coordinator
Maintenance of Way
617-222-5419

For Operating hours 5:00 AM - 1:30 AM
Green Line Superintendent
617-222-5982

It will be at the sole discretion of the Authority whether the Contractor will be allowed to perform work on any particular day or night.

D. All workers employed by the Contractor who are to work within the Authority's stations, track area, right-of-way or adjacent to the power traction system or any high voltage electrical cables, shall be required to attend a four (4) hour safety awareness course at the Authority's Safety School. First time attendees of the ROW Safety class shall attend an 8-hour session. The location and time of such school will be at the sole discretion of the Authority's Safety Department. The intent of this course is to make the Contractor's personnel aware of the particular hazards related to the Authority's operations.

E. All personnel working in the immediate vicinity of, or within the right-of-way are required to wear orange safety vests similar to standard Authority equipment. In addition, the Contractor's personnel or groups of personnel, working within the right-of-way or on the platform within 8 feet of the edge of the platform will require the presence of an Authority flagperson on duty at all times.

F. The Contractor shall not, at any time, operate equipment or machinery over Authority rights-of-way without the use of hi rail gear. All equipment that the Contractor proposes to operate shall be modified to operate over the Authority's tracks and special work including, but not limited to, switches, crossover frogs and restraining rail. The movement of all hi rail equipment will be controlled by Authority personnel at all times while operating on the Authority right-of-way.

The Contractor shall supply a portable radio for each hi rail vehicle entering the Authority's right-of-way. No hi rail equipment will be allowed on Authority property without a functioning Authority frequency portable radio.

G. Work activities necessitating the traction power system, third rail and trolley wire de-energization will require the services of an Authority power lineman on site at all times.

H. Prior to the implementation of the contracted work, the Contractor will be required to supply professionally rendered signs, as directed by the Engineer and/or the Authority's Marketing Department. These signs will include, but not be limited to, the following:

1. Informational signs and/or leaflets for revenue service interruptions.

2. Station and exit closing signs.

3. General project informational signs for Authority customers.

I. Upon the direction of the Authority's Director of Design and Construction and/or Director of Subway Operations, the Contractor shall supply partitions and wooden barricades to cordon off the work site. The partitions and barricades shall be maintained and remain graffiti free by the Contractor for the duration of the project.

J. Upon direction from the Authority's Director of Design and Construction and/or Director of Subway Operations, the Contractor shall supply the following when site conditions warrant:

1. Emergency and temporary lighting.
2. Exhaust fans of sufficient size and numbers to adequately ventilate the work site, tunnel and/or adjacent stations.
3. Fire and/or garden hose for the purpose of dust control.

K. It shall be the responsibility of the Contractor to keep the Authority informed as to the times when the Contractor intends to perform hazardous work. Failure of the Contractor to provide the Authority with suitable advance notice of hazardous work will result in the stoppage of the work by the Authority until such time as sufficient numbers of protection personnel are on duty at the site.

1.05 ANNUAL CERTIFICATION OF HI-RAIL EQUIPMENT

A. All equipment used by the Contractor on Authority property may be inspected by the Engineer (MBTA Safety Department) and shall not be used if considered unsafe. All Contractor/Subcontractor equipment (including hi-rail) operators must be trained, certified, and properly licensed. Documentation of same must be readily available and provided to the Authority upon request. If the Contractor equipment is involved in a derailment or a near miss incident or an accident which caused injury or exposed personnel to injury and/or caused damage to Authority property, that equipment will be subject to the Authority's Impound Policy/Procedure.

B. Contractor equipment to be used on or in the vicinity of the tracks shall be in first class condition, so as to positively prevent any failure that would cause delay in Authority operations or damage to its property or compromise the health and safety of personnel working on the project. Equipment shall not be placed or operated within the fouling distance of track without first obtaining the permission of the Authority.

C. The Contractor shall not, at any time, operate equipment or machinery over Authority right-of-way without the use of hi-rail gear. All equipment that the Contractor proposed to operate shall be modified to operate over the Authority's track and special work (e.g., switches, crossover frogs and restraining rail). The movement of all high rail equipment shall be controlled by qualified Authority personnel at all times while operating on the Authority right-of-way. The Contractor shall supply a portable radio for each hi-rail vehicle entering the Authority's right-of-way. No hi-rail equipment will be allowed on Authority property without a functioning Authority frequency portable radio.

D The Contractor shall furnish hi rail equipment capable of operating within the strict confines of the right-of-way. No Authority owned equipment is available for the Contractor's use. In addition to equipment necessary to complete the work on a regular basis, the Contractor shall be required to have on site sufficient standby equipment capable of: (a) removing disabled equipment from the right-of-way, and (b) replacing disabled equipment in order to return the right-of-way to normal operating status by the end of the designated work period. As part of the prequalification statement, the Contractor shall furnish an itemized list of all equipment to be used on the project, including:

1. Type of equipment including, but not limited to, pickup, flatbed or dump trucks, excavator, backhoes and cranes.

2. Make, model and date of manufacturer.

3. Ownership.

4. Present use and date of availability.

5. Location where equipment may be inspected by Authority personnel during the prequalification period.

E. The Contractor must prove proof of competency for hi-rail operators (e.g. documentation that the operator of hi-rail equipment is certified to operate that specific piece of equipment.) The Authority reserves the right to review the lesson plan and audit the training class. The hi-rail operator will be responsible (as stated in the Commercial Drivers License (CDL) for ensuring and documenting the condition of the equipment is safe and operation and all required equipment is present and secured prior to operating equipment on a daily basis.

F. The Contractor is required to have an Annual Certification of hi-rail equipment (separate from the Registry inspection), signed by a competent person (e.g. manufacturer's representative) that the equipment is Original Equipment Manufacturer (OEM), conforms to the latest standards, equipment was installed per the manufacturer's specification and is functioning properly.

G. The Contractor must keep a copy of the Manufacturers Operating Manual or instructions onboard the hi-rail equipment at all times.

H. The operator shall operate the hi-rail equipment at a reasonable speed for the existing conditions, being alert for another vehicle (or any other obstructions along the right of way). In addition, said operator must maintain a safe spacing of traveling equipment.

I. The Contractors hi-rail vehicles must be equipped with an exhaust gas purified.

J. All equipment when used in tunnels and/or darkness shall conform to the Authority's standards for headlights and marker lights. In addition, when vehicles are operating in tandem including, but not limited to, rail carts and flat cars, such vehicles shall be equipped with a flashing strobe light when the lead vehicle is other than the operating vehicle. Diesel powered equipment only will be allowed in the tunnel and shall be removed from the tunnel each night unless otherwise permitted by the Director of Subway Operations.

1.06 MEASUREMENT AND PAYMENT

A. Except for protection services provided by the MBTA for flagging personnel or any other such personnel as may be required to ensure the safety of the Authority's operations, no separate measurement or payment will be made for the work required under this Section. All costs in connection therewith will be considered incidental to the item or items of work to which they pertain.

B. Work specified in this Section for protection services required by the MBTA for flagging personnel or any other such personnel as may be required to ensure the safety of the Authority's operations will be provided by the Authority.

END OF SECTION

SECTION 01580

PROJECT IDENTIFICATION AND SIGNS

1.01 DESCRIPTION

A. This Section specifies Project Identification and Signs in accordance with Standard Specifications Division 1 - General Requirements Section 01580, except as modified herein.

1.02 PROJECT SIGN

B. Where and as approved by the Authority, the contractor shall erect and maintain signs identifying the Project and indicating State and Federal participation.

1. One (1) sign of each type shall be erected at each project site where and as directed by the Engineer for maximum public identification of the work and shall be maintained in good condition until completion of the project. Upon completion, the signs shall be removed.

2. Signs are to be cut from standard 4' by 8' waterproof plywood sheets, or other suitable material, and shall meet the design standards as shown in the attached figures (Sign Type A – State, Sign Type B – FTA).

3. The size may be varied to meet special or local requirements, but proportions shall be maintained.

4. Information and color of 6" horizontal color band to be included in Sign Type A shall be supplied to the Contractor by the Engineer.

5. No information shall be included on the project signs, except that stipulated in the above paragraphs.

E. Display Panel

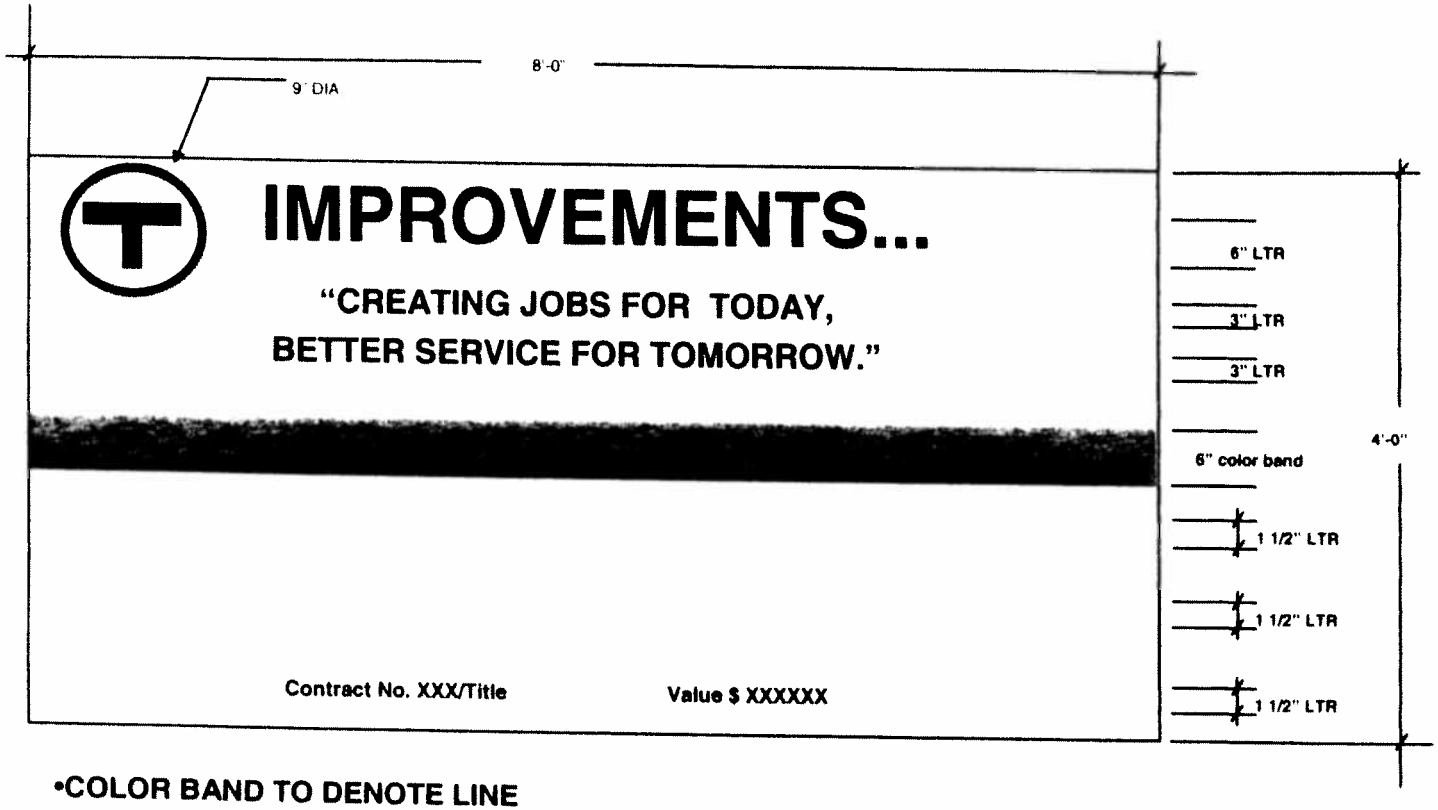
1. Construction, dimensions, colors and lettering shall be as per MBTA Standards.

2. Verbage: The Authority shall furnish the text, photograph and other graphics, and the Contractor shall furnish design and layout, and printing which are all subject to the approval of the Engineer prior to installation in the display panel. Installation of final, approved product in the display panels shall be made by the Contractor.

3. Quantity: One single sided, dual compartment display panel shall be installed on the job site as directed by the Engineer.

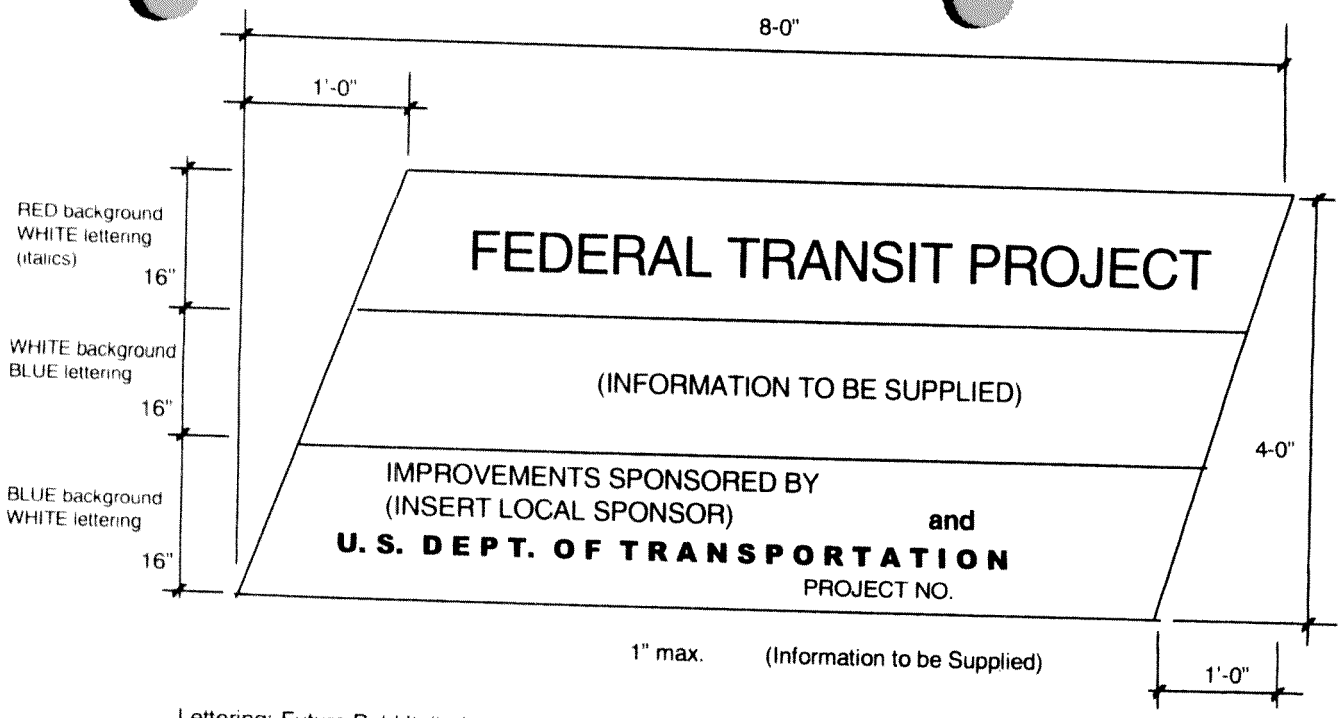
1.03 MEASUREMENT AND PAYMENT

A. No separate measurement nor payment will be made for work required under this Section. All costs in connection therewith shall be considered incidental to the item or items of work to which they pertain.



- **COLOR BAND TO DENOTE LINE**
- **TEXT TO BE HELVETICA MEDIUM**
- **CONTRACT NO. & VALUE TO REFLECT APPLICABLE CONTRACT**

SIGN TYPE A



Lettering: Futura Bold Italic (top)
Futura Bold (center)
Futura Demi Bold (bottom)

Adopted July 1966

SIGN TYPE B

SECTION 01590

FIELD OFFICES AND SHEDS

1.01 DESCRIPTION

A. This Section specifies the general requirements for field offices and sheds in accordance with Standard Specifications Division 1 - General Requirements Section 01590, except as modified herein.

B. The work under this section includes all labor, equipment, materials, and services to furnish, install and maintain an Engineer's field office in a location approved by the Engineer in the immediate location of the project, separate from any building or buildings used by the Contractor.

C. The work includes but is not necessarily limited to:

1. One (1) new modular trailer field office.
2. Sanitary facilities.
3. Heating facilities.
4. Lighting facilities.
5. Telephone and electric services.
6. Fencing and gates for field office area.
7. Office furniture and equipment.
8. Maintenance of field offices.
9. Inspection devices.
10. Parking Spaces

D. The area occupied by the trailer and associated parking spaces shall be enclosed with a 72 inch high chain link fence including a twelve-foot clear opening double-swing gate and a four-foot pedestrian gate all with three-strand barbed wire on extension arms conforming to Section 02444 Chain-Link Fence and Gates of the Standard Specifications and approved by the Engineer. Payment for the enclosure fence shall be made under item numbers in Section 02444.

As an alternative, the Contractor shall provide four parking spaces for the exclusive use of MBTA personnel in nearby public or private parking garages/lots.

E. Submittals

1. Trailer layout and details, equipment list.

1.02 FIELD OFFICE

A. Provide one (1) new modular field office trailer, fully equipped and ready for occupancy by the Authority, prior to the commencement of any construction work on the project. The trailer shall remain on location for 60 days after final acceptance of the contract. Provide four parking spaces for MBTA personnel either on site or in nearby public parking facilities.

B. Modular field office trailer shall be manufactured by McCarthy Mobile Offices Inc., Lynnfield, MA; Relco Corporation, North Andover, MA; Design Space International, Medford, MA; or

equal. Trailer shall contain approximately 600 square feet of floor space, and shall include the following provisions unless otherwise noted:

1. Partitions for office, toilet area, conference room, etc., as follows:

   a. A trailer with one office 120 sq. ft., one conference room 240 sq. ft., and toilet facilities and kitchenette facilities.

2. Overhead cabinets and bookshelves

3. Three wardrobe closet

4. All windows operative

5. Shades or venetian blinds for windows

6. Air conditioning and electric heating equipment capable of maintaining a temperature of 70 F.

7. Two-tube florescent lighting fixtures as required providing illumination of 70-foot candles in all areas, controlled by surface mounted toggle switches located near the entrance for each room of the trailer as directed by the Engineer.

8. Double convenience receptacles located throughout the trailer.

9. Electric sanitary water cooler with refrigerated storage compartment, supplied with cups and bottled spring drinking water for the duration of the project.

10. Sanitary facilities, including supplying toilet tissue, paper towels and soap.

C. Arrange for and comply with all necessary local permits and inspections including and incidental costs.

D. Arrange for electrical service for the trailer and provide the necessary meter connections, fuse box and switch as required by the utility company.

E. The trailer shall be "blocked-up", "leveled off" and the bottom closed in with plywood or other approved material as directed by the Engineer. Provide approved wooden steps (four feet wide) with handrails at the entrances to the trailer.

F. All electrical and plumbing work shall conform to state and local codes.

G. Provide 3/4-inch copper tubing for the water service, provided with sufficient pressure to completely expel the contents of the water closet in one operation. Provide approved electrical heating tape, as directed, together with necessary switches and thermostat for each water pipe, to prevent freezing.

H. Provide suitable septic tank and make proper sanitary connections thereto from the trailer if sewerage facilities are not available.

J. Insulate all services where necessary.

1.04 FIELD OFFICE EQUIPMENT

A. Equipment for Engineer's field office shall remain property of the Contractor upon completion of the work. Equipment to be provided shall include the following:

1. Suitable non-freezing type fire extinguisher shall be furnished for each trailer.

2. Three office type desks, minimum top dimensions 32 in. x 60 in., with two or more drawers on each side.

3. Three swirl desk chairs on casters with adjustable height tilt seat (one for each office type desk).

4. One slant-top drafting table, 48 in. x 89 in. minimum size with cover and storage compartment, and a parallel rule.

5. One adjustable height swirl type stool (drafting table type) on casters.

6. The drafting table shall be provided with a swivel type drafting table lamp as approved by the Engineer.

7. Five utility tables 30 inches high, minimum top size 30 in. x 60 in. (one for each office type desk, two for conference table).

8. Ten folding-type chairs.

9. One fire-resistant drawer-type safe, legal size, with combination lock. Combination to be reset at the direction of the engineer and revealed only to him.

10. Two legal size metal filing cabinets, four drawers, with lock to remain the property of the Authority.

11. Three electric pencil sharpeners

12. Two fully automatic electric calculators with tape standard 10 bank. Provide tape for the duration of the project.

13. One plain paper dry-copier capable of accepting originals sized up to 11 x 17 inch and of making reductions or enlargements. Provide maintenance, paper, toner, and all other required copier supplies for the duration of the project.

14. 3 lockers with locks shall be supplied for Field Inspectors.

15. Three round wastebaskets.

16. Provide telephone service consisting of separate line to trailer, line having a unique telephone number. Telephone service shall include two (2), one-line phone and one dedicated line for the telecopier (FAX) machine. Phone line shall be designated for voice service and shall have call waiting and call forwarding.

17. Provide one plain paper telecopier (FAX) machine with a telephone set. Provide paper and other supplies for the duration of the project. All costs for installation, maintenance and removal of the equipment shall be borne by the Contractor.

18. Provide two long distance display pagers for the duration of the project.

19. Provide two battery operated wall clocks

20. Two dust pans and brushes

21. Two 50 LF fiberglass tape (Engineer's)

22. Two 100 LF fiberglass tape (Engineer's)

23. One plan rack to be equipped with 10 rods of an approved design.

24. Furnish and maintain two industrial type first aid kits.

25. One desk top computers complete Compaq Deskpro, Hewlett Packard, Dell, or Engineer approved equal, each configured as follows:

(a) Processor - Intel Pentium III processor with MMX; Minimum Clock Speed - 866Mhz.

(b) Memory – minimum 128 MB. Must be expandable to at least 768Mb @ 70ns.

(c) Ports - 1 parallel, 2 serial, 1 mouse and 1 keyboard.

(d) Hard Drive - Minimum of 10 GB with SCSI-2 or IDE controller integrated into mother board that will allow for a minimum of 4 peripheral devices, hard-drive and/or CD ROM type devices.

(e) Slots - Minimum of 4 ISA (16 bit) and 2 PCI (1 for 64 bit for graphics card listed above) slots. Four (4) slots, 1 PCI, must be available after configuration is complete.

(f) CACHE - MINIMUM of 512 K cache.

(g) CASE - MINI TOWER.

(h) Diskette - 3.5 inch 1.44Mb

(i) Mouse - Two button desk top mouse, connection direct to mother board PC mouse port. Mouse systems requiring individual boards and slots or utilizing communications ports are NOT acceptable.

(j) Keyboard - 101 enhanced keyboard must connect via integrated PC port, not serial port.

(k) CD Rom -BASE system should be pre-configured with internal 40X CD-ROM drive. Must be compatible with internal hard drive protocol and require no additional I/O boards.

(l) Sound - PCI (64 bit) sound card - Sound Blaster or equivalent.

(m) Speakers - Dual speakers - Altec Lansing, Bose, JBL or equivalent stereo speakers.

(n) Microphone - Free standing microphone

(o) Monitor - 17" .28mm dot pitch. NON-Interlaced, SVGA flat Screen Color Monitor. Resolution - 1024x768 pixels. 75Hz refresh rate. If speakers are mountable on monitor, monitor must have a mounting system that will accept proposed speakers. Must have no less than 15.70" image.

(p) Software - Latest release of Microsoft Windows 98, Corel WordPerfect Suite, Lotus SmartSuite, Microsoft Office 2000, Norton Utilities.

(q) Warranty - Minimum three (3) year warranty for on site service, Monday-Friday 8am - 5pm EST.

(r) Printer - Hewlett Packard LaserJet 6p

(s) Modem - 56.6 Kbps Internal data/fax modem

(t) Network -IBM Token ring network Adapter/A or compatible ethernet card

(u) Communications - Dedicated analog phone line

26. Provide one Concrete Air Meter, Type B complying with the requirements of ASTM C231.

Acceptable suppliers include:

1. Forney, Inc.
c/o Myers Associates
28 Horseshoe Drive
Scarborough, ME 04074
Model No. LA-0316

2. TMI
1048 24th Street
Beaver Falls PA 15010
Model No. CA-500

3. Humboldt, Inc.
7300 West Agatite Avenue
Norridge, IL 60656
Model H-2786P

1.05 MAINTENANCE OF FIELD OFFICE

A. The Contractor shall provide maintenance and custodian service which shall include the following:

1. Daily trash removal

2. Weekly floor cleaning and waxing

3. Clean windows twice a month

4. Necessary repairs to damaged, vandalized or defective parts of equipment

5. Continue maintenance for 60 days after final acceptance of the work and keep the field offices clean, orderly, and in working condition at all times

6. Protect the field offices and their contents throughout the 24 hours of the day and be responsible for any loss of property of employees of the Authority housed therein, due to either fire, theft, vandalism or other causes.

7. Title to the field offices and equipment shall remain in the name of the Contractor, except as specified herein

8. Payment of regular electrical utility charges and regular telephone charges will be the responsibility of the contractor.

1.06 INSURANCE AND REPLACEMENT

A. At the time the field offices are made available to the Authority, the Contractor shall furnish evidence to the Engineer that insurance has been obtained which will protect the Authority and/or its employees against loss of property in the office trailer from fire, theft, storm, or flood.

B. The insurance shall be satisfactory to the Authority in form, coverage and substance in the amount of $2,500 non-deductible. The insurance shall be kept in effect 60 days after final acceptance of the work, with evidence of all necessary renewals being promptly forwarded to the Engineer.

C. In case of fire, theft, vandalism, or breakdown, all equipment involved shall be repaired or replaced by the Contractor within 48 hours and in the event a field office is destroyed or rendered untenable for any reasons, it shall be replaced within two weeks or as directed.

1.07 DEMOBILIZATION OF ENGINEER□S FIELD OFFICE

A. The Contractor shall not sooner than sixty (60) days or longer than ninety (90) days from the final acceptance date of the work, remove and take possession of the trailer field offices, and all other associated Engineer field office improvements to include water cooler, wooden steps, drafting table stool, drafting table, safe, pagers, copier and facsimile machine, as well as fire extinguishers, desk chairs, folding chairs, filing cabinets, lockers, wastebaskets, and telephones. The Contractor shall perform the necessary work to leave the Engineer's field office site in a neat and orderly condition. All other utilities shall be cut at the property line and plugged.

1.08 MEASUREMENT

A. All work included in this Section will be paid for at a Lump Sum price, which price and payment therefore shall constitute full compensation for all work as specified.

1.09 PAYMENT

A. Installation of potable water supply, sanitary waste disposal, telephone and electrical service to the field offices, including all associated materials and labor incidental to providing the services, shall be included under the contract lump sum price for the Field Office.

B. Payment for the Field Office and all other work specified in this section will be made at the contract lump sum price for Field Office-Trailer, Payment Item No. 0130.100, which price shall include full compensation for all material and work required. The basis of payment will be 50% of the lump sum price stipulated under Payment Item No. 0130.100, payable on the first estimate subsequent to complete installation of the field office with all equipment required. The remaining 50% will be pro-rated in equal amounts on each subsequent monthly estimate. The final month pro-rate amount will not be paid until the final payment. No separate payment will be made for utilities, holding tank, services, suppliers, maintenance, insurance, incidentals, and all costs therewith shall be included in the lump sum price.

1.10 PAYMENT ITEM

Item No.	Description	Unit
0130.100	Field Office - Trailer	LS

END OF SECTION

SECTION 01700

CONTRACT CLOSEOUT

1.01 DESCRIPTION

A. This Section specifies the general requirements for protection and final clearing of floors, provision of operations and maintenance manuals, and provision of as-built drawings in accordance with Standard Specifications Division 1 - General Requirements Section 01700, except as modified herein.

1.04 OPERATIONS AND MAINTENANCE MANUALS

B. Each subcontractor or trade through the Contractor shall fully explain the contents of the manuals and walk through the facility with individuals designated by the Authority.

C. Maintain on site during construction, and submit as part of Contract Closeout record documents, a completely documented file concerning any contaminated and/or hazardous wastes, soils, or materials encountered as part of or during the course of the work under this Contract. Documents shall include copies of submittals, correspondence, reports, removal documentation, test results, manifests, disposal receipts, permits, final disposition, or any other pertinent information required by governing agencies or other authorities.

1.05 AS-BUILT DRAWINGS

A. The Contractor shall maintain at the site a set of blueline prints and reproducible drawings on which will be accurately and clearly shown the actual installation of all work under this Contract and any variation from the Contract Plans, as Approved by the Authority including changes in sizes, locations and dimensions. Subcontractor changes shall be recorded. The Authority will provide one set of blueline on white drawings and the Contractor shall provide one set of double-matt reproducible mylar drawings from which to do this work.

B. Upon completion of the Work and after checking the subcontractors' as-built drawings, and all required drawings, submit a complete set of marked-up record drawings to the Engineer by registered mail in time to be used for the final inspection, and acceptance and for verification by the Engineer. Availability of as-built drawings shall be a prerequisite to scheduling a final inspection of the Contract and these drawings and the Contract Documents will be used in checking completion of the Work. Non-availability of as-built drawings or inaccuracies therein may be grounds for cancellation and postponement of any scheduled final inspection by the Authority until such time as the drawings are available or the discrepancy has been corrected. Upon completion of the work, the as-built drawings shall become the property of the Authority. If as-built drawings are not maintained as required herein to the satisfaction of the Engineer, the Authority will deduct from monthly partial payments, an amount representing the estimated monthly cost of maintaining the as-built drawings, and will continue deduction of the 5 percent retainage after 50 percent completion of the Contract, as provided in Section 01150, Article 1.06, 1.07.

C. At the conclusion of the work, the Contractor shall deliver to the Authority a complete set of reproducible record Drawings which shall be transparencies on mylar and 35mm Microfilm and Aperture Cards showing the entire work as actually installed. These record Drawings shall include changes that took place during the Addenda period and the construction period. This

submittal shall be approved as being complete by the Engineer, and will constitute a contract requirement. Approval of the final as-built submittal is required before final payment.

D. A clean sepia of all shop drawings reflecting any changes shall be submitted to the Engineer incorporating all review comment along with the as-built drawings. Yellow line/red line corrections will not be accepted.

1.05A SUBSTANTIAL COMPLETION

A. Procedure:

1. Prepare and submit a list of outstanding items, to be completed by the contractor. This will form the basis of a Punch List.

2. Within a reasonable time after receipt of the list, the Engineer will inspect to determine status of completion of each item or add new items as necessary.

3. Should the Engineer determine that the Work is not substantially complete:

   a. The Engineer promptly will so notify the Contractor, in writing, giving the reasons therefore.

   b. Contractor will remedy the deficiencies and notify the Engineer when ready for re-inspection.

   c. The Engineer will re-inspect the work.

4. When the Engineer concurs that the Work is substantially complete:

   a. The Engineer will prepare a 'Certificate of Substantial Completion", accompanied by the Contractor's list of items to be completed or corrected, as verified by the Engineer.

   b. The Engineer will submit the Certificate to the Authority as to the Contractor for their written acceptance of the responsibilities assigned to them in the Certificate.

B. Final Completion:

1. Prepare and submit the notice required by the General Conditions.

2. Verify that the Work is complete including, but not necessarily limited to, the items mentioned in the General Conditions.

3. Certify that:

   a. Contract Documents have been reviewed;

   b. Work has been inspected for compliance with Contract Documents;

   c. Work has been completed in accordance with Contract Documents;

d. Equipment and systems have been tested as required, and are operational;

e. Work is completed and ready for final inspection.

4. The Engineer will make an inspection to verify status of completion.

5. Should the Engineer determine that the Work is incomplete or defective:

a. The Engineer promptly will so notify the Contractor, in writing, listing the incomplete or defective work.

b. Remedy the deficiencies promptly, and notify the Engineer when ready for re-inspection.

6. When the Engineer determines that the work is acceptable under the Contract Documents, he/she will request the Contractor to make closeout submittals.

C. Closeout submittals include, but are not necessarily limited to:

1. Project Record Documents described in Section 01300 and this Section;

2. Operation and maintenance data for items so listed in pertinent other Sections of these Specifications, and for other items when so directed by the Engineer;

3. Warranties, certificates, and bonds;

4. Keys and keying schedule;

5. Evidence of compliance with requirements of governmental agencies having jurisdiction including, but not necessarily limited to:

a. Certificates of Inspection;

6. List of subcontractors, service organizations, and principal vendors, including names, addresses, and telephone numbers where they can be reached for emergency service as may be needed.

7. Certificates of Insurance for products and completed operations;

8. Evidence of payment and release of liens;

END OF SECTION

SECTION 02090

LEAD-BASED PAINT ABATEMENT

PART 1 – GENERAL

1.01 DESCRIPTION

A. This Section specifies the minimum work practice requirements for the testing, identification, removal, containment, recovery, and disposal of lead based paint (LBP) and associated waste generated as a result of relocation and reconstruction or surface preparation activities as designated for the Massachusetts Bay Transit Authority (MBTA) Longwood Station and Brookline Village Green Line Station Shelters located in Brookline, MA.

The intent of this section is to outline Contractor responsibilities deemed necessary to prevent the contamination of the air, soil, and water around the project site during LBP removal and surface preparation activities.

All lead-based paint removal work is to be performed in accordance with these specifications, Environmental Protection Agency (EPA), Occupational Safety and Health Administration (OSHA), Department of Transportation (DOT), National Institute of Occupational Safety and Health (NIOSH), Massachusetts Department of Environmental Protection (DEP), Massachusetts Department of Labor and Industries (DLI) and other state and local regulations. Wherever there is a conflict or overlap of the above references, the most stringent provisions shall apply.

B. All lead based painted surfaces associated with the renovation/demolition work are included in the scope of work.

It is the Contractor's responsibility to familiarize himself with existing conditions (e.g., paint condition, extent of rust and pitted steel) and the extent of surface preparation necessary at the project site.

C. A lead paint survey of all work areas shall be conducted (including but limited to all areas of construction, repainting and demolition). The existence of lead in paint coatings must be identified prior to any work. Lead paint testing may include various methods including portable x-ray fluorescence (XRF), chemical spot tests or laboratory analysis of samples removed from the field. All testing shall be in accordance with state and federal regulations.

D. The Contractor, or his De-leading Sub-Contractor acceptable to the Engineer, must have a current Massachusetts DLI De-leading Contractor's License, and meet other qualification requirements specified herein.

E. Contractor responsibilities established in this section include the furnishing of all labor, materials, and equipment required to test, identify, remove, contain, recover, and dispose of LBP and associated waste as called out in these specifications.

1. Test all surfaces for lead paint.
2. Determine if total removal of lead paint or a coating system upgrade is appropriate. If a coating system upgrade is appropriate, determine whether spot touchup, partial removal, or zone painting is the preferred method. Method selection is contingent on Engineer's approval.

3. Determine surface preparation technique(s).

4. Removal of paint from selected lead paint contaminated surfaces.

5. Spot removal of paint from surfaces to facilitate demolition.

6. Remove all temporary containment system structures daily, or as allowed by the Engineer.

7. Test and dispose of all surface preparation debris generated as a result of LBP removal in accordance with requirements of this specification and federal and state regulations on hazardous and solid waste.

8. Test and dispose of all demolition debris in accordance with this specification and all local, state, and federal regulations.

1.02 DEFINITIONS:

A. For the purposes of this specification the following definitions shall apply:

1. "Abatement" shall mean LBP removal or other work accomplished to reduce or eliminate lead-based paint hazards.

2. "Authorized Visitor" shall mean the Authority's representatives, representatives of any regulatory or other agency having jurisdiction.

3 "Certified Clean" shall mean that a work area has no visible signs of contamination or lead-based paint as determined by the Engineer.

4. "Containment System" shall designate a system of modular fabrications, temporary cover panels, polyethylene sheeting, screens, tarps, scaffolds, and or supports used to enclose the parameter of a lead-based paint abatement work area, as to prevent the release of LBP contamination from the work area to the environment.

5. "Containment of Lead Based Paint (LBP)" shall mean preventing the removed materials from being released to the environment. efficiency particulate absolute (HEPA) air filter *of 99.97%* efficiency by 0.3 micron DOP test.

6. 'Manifest" Shall mean the shipping document U.S. EPA Form 8700-22 and, if necessary, U.S. EPA Form 8700-22A, originated and signed by the generator.

7. "Permissible Exposure Limit (PEL)" shall mean maximum allowable 8-hour time weighted average airborne exposures as specified within 29 CFR 1910.1000, Sub part 2 - Exposure to Hazardous Substances. For the purposes of this project, the PEL for lead shall be .50 mg/m(3), 8-hour TWA, per OSHA.

8. "Project" or "Work" shall mean work performed according to all Contract Documents.

9. "Provide" shall mean to furnish (or supply) and install.

10. "Recovery of Lead Based Paint" shall designate the operation whereby debris is collected within the containment system for the purposes of appropriate disposal.

11. "Removal of Lead Based Paint" shall mean dislodging paint, rust, mill scale, and any other debris

from structural steel surfaces.

12. "Representative Sample" shall mean a sample which can be expected to exhibit the average properties of a designated material.

13. "Seal" shall mean preparing an area such that there is no LBP contaminant movement from the area.

14. "Surface preparation" shall meet the definition of LBP removal such that metal surfaces are free of visible paint chips, dirt, and rust, and a profile satisfactory for the specified replacement coating is produced. The Contractor will be allowed to utilize any one or any combination of the surface preparation methods discussed below. The use of alternative surface preparation technologies (e.g., blast cleaning, pressurized water jetting, air abrasive wet blasting, LBP surface encapsulation/ epoxy treatments) shall be restricted for use only with the prior written consent of the Engineer.

    Hand and Power Tool Cleaning: Use of hand and power operated wire brushes, sanders, scrapers, vacuums, grinders, descalers, and or other appropriate devices.

    Vacuum Blasting: Use of blast cleaning technology (abrasives propelled across a surface using compressed air) associated with a special vacuum assembly which forms a seal at the treated surface to create a closed blasting cycle. The abrasive (e.g. cast steel, malleable iron, or aluminum oxide) is automatically recirculated, cleaned of debris, and returned for reuse.

    Wheel Blast Cleaning: Use of blast cleaning technology that propels abrasive to the surface using centrifugal force. This method also requires a special vacuum assembly and a seal at the treated surface to create a closed blasting cycle. The abrasive (e.g., cast steel, malleable iron, or chilled cast iron) is automatically recirculated, cleaned of debris, and returned for reuse.

    Chemical Stripping: Use of a chemical paste containing alkaline or acidic solvent materials. The paste may be troweled or spray-applied to surfaces and covered with polyethylene sheeting. Paint will be absorbed by the paste which bonds to the polyethylene sheeting. The paint, paste, and sheeting is stripped away in a single step.

15. "Storage" shall designate the holding of LBP contaminated waste for a temporary period, at the end of which time the waste is treated, disposed of, or stored elsewhere.

16. "Subtitle C Landfill" shall mean a landfill permitted in accordance with Subtitle C of the Resource Conservation and Recovery Act for the disposal of hazardous.(e.g., LBP) waste.

17. "Subtitle D Landfill" shall mean a landfill permitted in accordance with Subtitle C of the Resource Conservation and Recovery Act for the disposal of non-hazardous waste.

18. "Ventilation System" shall mean any mechanical means of providing air movement within the containment system whereby air is filtered through HEPA exhaust units prior to discharge from the work area.

19. "Treatment" shall mean any method, technique, or process designed to alter a hazardous waste (e.g., LBP) so as to reduce the waste volume or make such waste safer for transport and

ultimate disposal.

20. "Work Area" shall mean those areas where lead-based paint abatement procedures are required. All work areas are considered contaminated spaces from the first instance of possible or actual contact with or disturbance of lead-based paint, or as determined by the Engineer, until the area is certified clean by the Engineer.

1.03 SUBMITTALS

A. The Contractor shall submit to the Engineer three (3) copies of the following listed items within 10 days after notice to proceed. No lead removal work activities shall commence until these items are reviewed by the Engineer, unless otherwise waived. Submittal data shall be in sufficient detail to enable the Engineer to evaluate the Contractor's proposed work plans, methodologies, products and equipment for the purposes of determining conformity with the Project Specifications. Each submittal item shall be identified with a cover page and/or transmittal sheet containing the listed submittal number.

1. Name and experience of proposed Supervisors and Foremen (Submittal #1).

   Note: For Submittals 2 through 4, submit for General Superintendent and Supervisor/Foremen as soon as possible after award of Contract. Submit for workers at time of hiring.

2. Summary of work force by disciplines, and a notarized statement documenting that all proposed workers, by name, have received all required medical examinations and have been properly trained in lead removal work, respirator use, and appropriate State of Massachusetts, EPA and OSHA standards (Submittal #2).

3. Submit a copy of the training certificate and Massachusetts Department of Labor and Industries Certification for each worker (Submittal #3).

4. Report from Medical Examination: Conducted within last 12 months as part of compliance with OSHA medical surveillance requirements for each worker who is to enter the work area. Submit, at a minimum, for each worker the following: (Submittal #4)

   a. Name and Social Security Number

   b. Physician's Written Opinion from examining physician including at a minimum the following:

   Whether worker has any detected medical conditions that would place the worker at an increased risk of material health impairment from exposure to lead.

   Any recommended limitations on the worker or on the use of personal protective equipment such as respirators.

   Statement that the worker has been informed by the physician of the results of the medical examination and of any medical conditions that may result from lead exposure.

   c. Statement that worker is able to wear and use the type of respiratory protection proposed for the project, and is able to work safely in an environment capable of producing heat stress in the worker.

5. Plan of Action and Standard Operating Procedures: Submit a detailed plan of the procedures

proposed for use in complying with the requirements of this specification. This plan should include:

a. Contractor-verified quantification of materials to be removed, and a detailed schedule (shift days, shift times, crew sizes) for performing the required work.

b. A detailed description of methods proposed by the Contractor to remove LBP coatings and prepare surfaces for repainting (as limited by Part 1.02, Item A. 14).

c. The projected average airborne lead concentrations (reported in mg/m3 at the work site during LBP removal and surface preparation activities, given the Contractors proposed methods of removal. Contractor will cite published and or verifiable historic data to support his projections and or outline a plan to establish pilot LBP removal areas at the project site prior to commencing full scale surface preparation activities.

d. The most appropriate method of establishing LBP removal work areas and containment systems (as applicable). The degree of containment shall be appropriate for the anticipated levels of airborne lead dust. The lower the level of airborne lead, the lesser the requirements necessary to control lead emissions at the job site, as specified below:

1. LBP removal operations associated with lead levels below the EPA National Ambient Air Quality Standard (NAAQS) for lead (averaged over an 8 hour work shift) shall require no special containment precautions. No engineering controls shall be required for any LBP removal operation which creates 8-hour average airborne lead levels equal to or less than 0.0015 mg/m3.

2. LBP removal operations exceeding the EPA NAAQS for lead (averaged over an 8hour work shift) shall require full containment as the minimum engineering feature. Any operation which produces 8-hour average airborne lead levels in excess of 0.0015 mg/m3 shall require full containment.

3. LBP removal operations exceeding the OSHA "action level' for lead (0.03 mg/m3 averaged over an 8-hour work shift) shall require full containment and decontamination facilities as minimum engineering features.

4. LBP removal operations exceeding the OSHA "permissible exposure limit" for lead (0.05 mg/m3 averaged over an 8-hour work shift) shall require full containment, negative pressure, and decontamination facilities as minimum engineering features.

e. The estimated quantities of lead waste to be generated given the proposed methods of LBP removal; on-site waste storage areas; and waste removal sequencing.

f. A detailed LBP sampling plan specifying the proposed frequency of sampling, locations of sampling, sampling to analyze LBP waste in accordance with EPA Method 1311, Toxicity Characteristics Leaching Procedure (TCLP). Contractor and supporting vendor vehicle access parking. Contractor access to the work area. Availability of utility services and toilet facilities at the work site. Determination of any mechanical or electrical equipment or movable items to be removed from the work area by the Contractor, and the location of temporary storage space. Details of any proposed work platforms and or containment system design features including descriptions and or drawings of the following:

1) Locations, sizes, elevations, and numbers of individual work platforms and or enclosure systems.

2) Manner of construction, anticipated loads during operations, and load bearing capacities for each, work area platform and or enclosure system (to be reviewed by the Engineer to confirm the structural adequacy of each containment given imposed loads).

3) Proposed use and engineering of any proposed contamination control features such as HEPA filtered negative pressure systems and decontamination facilities.

4) Special considerations used to protect the containment integrity from effects of the local climate (e.g., and, rain, snow, etc).

5) Discussion of special permitting and construction code requirements applicable to installation of any work platform and containment system.

h. Provide the following information pertaining to the design of any proposed negative air pressure systems:

1) Number of HEPA-filtered negative air exhaust machines required and the calculations necessary to determine the number of machines.

2) Description of projected air flow within work area and methods required to provide adequate air flow in all portions of the work area.

3) Pressure differential across work area enclosures anticipated.

4) Description of methods of testing for correct airflow and pressure differentials.

5) Manufacturer's product data on the machines to be used.

6) Location of the machines in the work space.

7) Method of supplying adequate power to the machines and designation of building electrical panel(s) which will be supplying the power.

8) Description of work practices to insure that dust will travel downstream from workers.

9) Manufacturer's product data on equipment used to monitor pressure differential between inside and outside of work area.

i. The standard operating procedure shall also ensure:

1) Tight security from unauthorized entry into the work spaces (specify the placement and wording of the lead hazard warning signs).

2) Proper protective clothing and respiratory protection prior to entering the work

space.

3) Safe work practices in the work place, including provisions for inter-area communications; exclusion of eating, drinking, smoking; or use of procedures or equipment that would in any way reduce the effectiveness of respiratory protection or other engineering controls.

4) Proper exit practices from the work space to the outside.

5) Removal of lead-based paint in ways that minimize dust and maintains airborne lead concentrations below the ambient levels projected by the Contractor in Part 1.03, Item A.5.e.

6) Packing, labeling, loading, transporting, and disposing of contaminated material in a way that minimizes or prevents exposure and contamination.

7) Emergency evacuation of personnel, for medical or safety (fire and smoke) so that exposure will be minimized.

8) Safety from accidents in the work space, especially from electrical shocks, slippery surfaces, and entanglements in loose hoses and equipment.

9) Provisions for effective supervision, and OSHA-specified personnel air monitoring for exposure during the work. (Submittal #5).

6. Contingency Plan: Submit a contingency plan for emergencies including fire, accident, power failure, negative air system failure, supplied air system failure, or any other event that may require modifications or abridgement of decontamination or work area isolation procedures. Include in the plan specific procedures for decontamination and work area isolation. Specify all Contractor response contingencies to be instituted in the event that the ambient levels projected by the Contractor in Part 1.03, Item A.5.e are exceeded during LBP removal operations. Note that nothing in this specification should impede safe exiting or providing of adequate medical attention in the event of an emergency. Include telephone number and locations of emergency services including but not limited to fire, ambulance, doctor, hospital, police, power company, telephone company (Submittal #6).

7. Summary of other proposed materials and equipment (manufacturer, catalog number or model, and description) and method of application or use, including but not limited to chemical treatments or paint strippers, paint stripping apparatus, personal protective equipment proposed for performing the work (Submittal #7).

8. A plan describing the method for exposure monitoring to document compliance with OSHA General Industry Standard for Lead, 29 CFR 1910.1025, including frequency of monitoring, equipment and calibration methods, and name of analysis laboratory (Submittal #8).

9. Lists of all permits, licenses, or manifests which will be applied for and used (Submittal #9).

10. Copies of all applicable daily inspection and record logs, including work area entry data, respirator inspections and maintenance, HEPA-exhaust inspections and maintenance, and other work applicable activities (Submittal #10).

11. Name, location, and applicable licenses for primary disposal site for lead-based paint waste (Submittal #11).

12. Respiratory Protection Program: Submit level of respiratory protection intended for each operation required by the project (Submittal #12).

13. Handling, Disposal and Analysis of Debris: The Contractor shall submit the following:

    a. A written plan that addresses the collection, handling, sampling, testing and site storage of lead containing debris and this shall include the testing of soil quality. The Contractor shall detail how he will comply with the testing, labeling, storage and accumulation requirements of 310 CMR 30.00.

    b. The Contractor shall submit the name and address of the certified testing laboratory to perform the sampling and analysis for TCLP.

    c. The Contractor shall submit the name, address and EPA identification number of the DEP licensed hauler who will remove hazardous waste.

    d. The Contractor shall submit the name, address, and EPA identification number of the treatment/storage/disposal facility who will receive the hazardous waste.

    e. The Contractor shall submit a copy of the on-site contingency plan which outlines steps to take in the event of a hazardous waste spill or release including procedures for notification to DEP in the event of a reportable quantity release in accordance with 3 10 CMR 30.00 and 3 10 CMR 40.00.

1.04 PROJECT COORDINATION

A. Minimum administrative and supervisory requirements necessary for coordination of work on the project include but are not necessarily limited to the following:

1. Administrative and supervisory personnel.

2. Special reports.

3. Contingency Plan.

4. Notifications to other entities at job site.

B. Administrative and Supervisory Personnel:

1. General Superintendent: Provide a full-time General Superintendent who is experienced in administration and supervision of lead abatement projects including work practices, protective measures for building and personnel, disposal procedures, etc. This person shall generally remain outside the Work Area, except for daily checks on the quality and progress of work, and be available to the Authority and the Engineer at all times while work is in progress.

C. Special Reports: Except as otherwise indicated, submit special reports directly to the Engineer within one day of occurrence requiring special report, with copy to others affected by occurrence.

1. Reporting Unusual Events: When an event of unusual and significant nature occurs at site (examples: failure of negative pressure system, rupture of temporary enclosures), prepare and submit a special report listing chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects, and similar pertinent information. When such events are known or predictable in advance, advise the Engineer in advance at earliest possible date.

2. Reporting Accidents: Prepare and submit reports of significant accidents, at site and anywhere else work is in progress. Record and document data and actions; comply with industry standards. For this purpose, a significant accident is defined to include events where personal injury is sustained, or property loss of substance is sustained, or where the event posed a significant threat of loss or personal injury.

D. Contingency Plan:

1. Contingency Plan: (See Submittal No. 6 for Contractor requirements).

E. Prior to the start of work, the Contractor will prepare and submit a detailed removal plan to the Engineer for review. This plan must comply with all applicable Federal, State, and local regulations. No work relative to this section shall begin until the Engineer has accepted the Contractors removal plan.

1.05 SCHEDULES AND REPORTS

A. Coordination: Coordinate both the listing and timing of reports and activities required by provisions of this section and other sections, so as to provide consistency and logical coordination between the reports. Maintain coordination and correlation between separate reports by updating at monthly or shorter time intervals. Make appropriate distribution of each report and updated report to all parties involved in the work including the Engineer. In particular provide close coordination of the progress schedule, schedule of values, listing of subcontracts, schedule of submittals, progress reports, and payment requests.

B. Provide proposed detailed schedule including work dates, work shift time, number of employees, dates of start and completion including dates of preparation work, removals and final inspection dates.

C. Daily Construction Reports: Prepare a daily construction report, recording the following information concerning events at the site; and submit duplicate copies to the Engineer at weekly intervals:

1. List of subcontractors at the site.

2. Accurate count of personnel at the site.

3. High and low temperatures, general weather conditions.

4. Personal air monitoring results.

5. Accidents and unusual events.

6. Meetings and significant decisions.

7. Stoppages, delays, shortages, losses.

8. Meter readings and similar recordings.

9. Emergency procedures.

10. Orders and requests of governing authorities.

11. Change Orders received, implemented.

12. Services connected, disconnected.

13. Equipment or system tests and start-ups.

14. Partial Completions, occupancies.

15. Substantial Completions authorized.

D. Daily Log: Maintain on site a dally log documenting the dates and time of but not limited to, the following items:

1. Meetings; purpose, participants, discussion (brief)

2. Visitations; authorized and unauthorized

3. Personnel, by name and Social Security Number, entering and leaving the work area

4. Special or unusual events, i.e., Barrier breaching, Equipment failures

5. Air monitoring tests and test results as required by OSHA

6. Documentation with confirmation signature by the Engineer of the following:

   a. Visual inspections conducted prior to work area break down

   b. Visual observation of LBP sampling for hazardous waste classification

7. Inspection of work area preparation prior to start of removal and dally thereafter

8. Removal of any polyethylene barriers.

9. Contractors inspections.

10. Removal of waste materials from work area

11. Decontamination of equipment (list items)

12. Contractors final inspection.

13. Provide two copies of this log at final closeout of project for use by the Engineer.

1.06 SPECIFICATIONS AND DRAWINGS

Unless otherwise noted, any provided drawings are diagrammatic and intended to convey the location of work and general arrangement of work locations.

1.07 SUBSTITUTIONS

A. Where equipment or materials are specified by manufacturer's name, trade name, or catalog reference, the words "or an equal approved by the Engineer" -shall understood to follow. An item shall be considered equal to the item so named or described if:

1. It is at least equal in quality, durability, appearance, strength, and design.

2. It performs at least equally the function imposed by the general design for the Work.

3. It conforms substantially, even with deviations, to the detailed requirements for the items as indicated by the Specifications.

B. The Contractor shall submit sufficient information to allow the Engineer to determine that materials or equipment proposed are equivalent to those named. Submittals shall include but not limited to the following: material or equipment name, name of manufacturer, along with complete specifications and descriptive data, shop drawings (catalog cuts). Three copies of submittals shall be provided in sufficient time to permit their revision.

C. The Engineer reserves the right to disapprove this proposed equipment or material if, in his opinion, they are not equal in quality, durability, appearance, strength, performance, design, physical dimensions, or arrangement to the materials or equipment offered by the specified manufacturers.

D. If the Contractor proposes to use a method, or an item of equipment or materials other than that specified, redesign, new drawings required for it shall be prepared by the Contractor without extra compensation.

E. Similarly, when a different quantity and arrangement of material and equipment is required to perform Work that is specified or indicated on the drawings, Contractor shall provide all material and additional equipment required without extra compensation.

1.08 APPROVALS

A. The material, workmanship, design and arrangement of all Work installed under the Contract shall be subject to the approval of the Engineer.

B. If material or equipment is ordered, delivered or installed before it is approved, the Contractor shall be liable for providing approved material or equipment without extra compensation, if, in the opinion of the Engineer, the material or equipment does not meet the intent of the drawings and Specifications.

1.09 SHOP AND ERECTION DRAWINGS

A. After receiving approval of the list of equipment and material manufacturers called for in the preceding paragraph, and prior to delivery of any material to the job site, and sufficiently in advance of required delivery date to allow Engineer time for checking, the Contractor shall submit for approval six (6) copies of detailed dimensioned drawings or cuts of all equipment showing construction, size, arrangement, performance characteristics, operating clearance, capacity of equipment, electrical characteristics, and accessories as specified or shown on drawings. All equipment, unless otherwise specified shall be a standard cataloged product of an established manufacturer, of equal quality, durability and finish to that specified. Engineer may also request drawings for approval of any items to be constructed or fabricated by Contractor.

B. Drawings, catalogs, samples, specifications, etc., submitted for approval shall be clearly labeled indicating service or use, Contractor's name, manufacturer's name and address. Items for which approval is being requested shall be specifically, and indelibly identified. Data of a general nature, or incomplete data in any respect, will not be approved.

C. Approval of shop drawings shall be final and no further changes will be considered without written application from the Contractor and will not be allowed without written consent of the Engineer. Approval of shop drawings does not apply to quantities nor relieve the Contractor of his/her responsibility or necessity of furnishing materials, or performing Work as required by the Specifications. Approval of shop drawings shall not be considered a guarantee of measurements or of work site conditions.

1.10 GENERAL APPLICABILITY OF CODES, REGULATIONS AND STANDARDS

A. All materials and Work shall comply with the requirements of the NBFU, FM, NEC, UL, local fire and utility companies, the Board of Health, with the recommendation of the fire insurance rating organization having jurisdiction, with the state and national building codes, and with the requirements of all governmental departments having jurisdiction. The Contractor shall file all necessary plans, prepare all documents and obtain all necessary approvals of all governmental departments having jurisdiction. The Contractor shall bear all governmental taxes, fees, and other costs in connection with his Work. If the Contract requirements are in excess of the applicable codes, rules or regulations, the Contract provisions shall be given precedence, unless specific approval is granted by the Engineer.

B. The Contractor shall comply with the requirements of the following regulations, and maintain a copy of each at the work site:

1. U.S. Dept. of Labor, OSHA Exposure in Construction (CFR Title 29, Part 1926.)

2. Massachusetts Dept. of Labor and Industries Regulation 454 CMR 22.00: Deleading Regulations

3. Massachusetts Dept. of Environmental Protection Regulation 310 CMR 30.00.

4. U. S. Department of Labor, OSHA Publication 3126, "Working with Lead in the Construction Industry".

5. National Ambient Air Quality Standard for Lead (CFR Title 40, Part 50, Appendix G).

6. U.S. Environmental Protection Agency, Hazardous Waste Regulations (CFR Title 40, Parts 260 -268).

7. All local ordinances, regulations, or rules pertaining to lead, including its storage, transportation and disposal.

C. Certain materials are described by reference to standard specifications. The organizations creating many of these standard specifications as referenced in this document are as follows:

IEEE	Institute of Electrical and Electronic Engineers
ANSI	American National Standards Institution
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers

ASME	American Society of Mechanical Engineers
SSPC	Steel Structures Painting Council (specific references to SSPC Guides 61 and 71).
ASTM	American Society for Testing Material
NBFU	National Board of Fire Underwriters
NEC	National Electrical Code
NEMA	National Electrical Manufacturers Association
UL	Underwriters Laboratories, Inc.
FM	Fireman's Mutual
OSHA	U.S. Dept. of Labor, Occupational Safety and Health Administration, or Act
NIOSH	National Institute for Occupational Safety and Health
EPA	U.S. Environmental Protection Agency
DEP	Mass. Department of Environmental Protection
DLI	Massachusetts Department of Labor and Industries

D. The particular specifications shall be identified by appropriate prefix and number only, with the latest revision being applicable.

1.11 NOTIFICATIONS, PERMITS, AND LICENSES

Maintain current licenses, permits and notifications as required by applicable state or local jurisdictions for the removal, transporting, disposal or other regulated activity relative to the work of this contract.

1.12 BIOLOGICAL MONITORING

All workers must have baseline and post abatement blood lead level testing as specified in 454 CMR 22.00 and 29 CFR 1910.1025. A worker will be removed from the job if his blood lead level is 30 micrograms per deciliter or greater. The Contractor shall be responsible for medical surveillance and record keeping.

1.13 CONTRACTOR AND PERSONNEL QUALIFICATIONS

Proposed lead abatement personnel must be acceptable to the Engineer. Acceptability shall be based upon submission by the Contractor of the following:

A. Contractor Experience: Name and locations of at least three (3) lead abatement projects with the name and telephone number of purchaser of abatement services.

B. Personnel Qualifications: All personnel of the Contractor involved with lead abatement work must be trained, tested, and certified by the Commonwealth of Massachusetts prior to any work and shall be

thoroughly familiar with the standard operating procedure of the Contractor for abatement work and all applicable regulations governing lead abatement work. All personnel shall undergo the medical examinations required by OSHA. All superintendents and the foremen shall be thoroughly familiar with all applicable regulations and practices for lead work, and shall have participated in at least three abatement projects during the last two years. All personnel shall be trained in the use and care of respirators and shall pass an OSHA-specified respirator fit test. Anyone without the above qualifications shall not be allowed to work in the abatement area at any time.

1. For Supervisor/Foreperson demonstrate: (see also paragraph 1.03 - Submittals):

   a. Training and knowledge of applicable regulations and expertise in safety and environmental protection as evidence by the participation and successful completion of training as specified in 454 CMR 22.00.

   b. Experience with abatement work as evidenced through participation in at least three lead abatement projects.

   c. On-site Supervisor/Foreperson shall be trained in CPR and First Aid.

2. For Workmen Demonstrate:

   a. Any worker entering a Work Area known to contain lead-based paint for the purposes of removing or disturbing lead based paint must have successfully completed training as specified in 454 CMR 22.00. The Contractor must provide proof that employees have taken and passed the course. Contractor will adhere to OSHA Regulations CFR 1910.1025 and 1910.1200.

1.14 AVAILABILITY OF TRAINED PERSONNEL

A. There shall be a sufficient number of trained and qualified workers, foremen and superintendents to accomplish the work within the required schedule. Since general construction/demolition work activities cannot start prior to the successful decontamination of work areas, it is imperative that a sufficient number of trained personnel be engaged throughout the abatement process. No untrained nor fully qualified and preapproved person shall be employed to speed up completion of the abatement work.

1.15 RESPIRATORY PROTECTION

A. Respirator Use: The Contractor shall insure that all workers wear an acceptable, approved respirator at all times while performing work area preparation, demolition, lead-based paint removal, and cleanup tasks, or while performing any other related task specified by the Engineer.

B. Training: The Contractor shall have a formal written respirator training program, and shall, on request, furnish documentation of the participation of each worker in this program. The formal written respirator protection program must be implemented in accordance with 29 CFR 1910.134.

C. The Contractor will provide all workers, foremen and supervisors with a minimum of a properly fitted half-face MSHA/NIOSH approved respirator. Authorized visitors (i.e. Federal, State and local Inspectors) must provide a current health and medical report certifying them as approved to wear half-faced respirators. When respirators and disposable filters are used, sufficient replacement filters will be provided by the Contractor for the workers and any visitors.

D. Respirator Flow Testing, Inspections, and Record keeping:

1. The Contractor's written respirator plan shall require that each worker be provided an individual respirator with a distinct identification number.

2. The Contractor shall maintain (and supply for inspection by the Engineer) a log of each worker and his assigned respirator identification number. Where PAPR's are utilized, such log shall also list the applicable battery pack assigned to each respirator.

3. Respirators shall be thoroughly inspected by each worker before and after they are used. They shall be thoroughly cleaned in the Decontamination Facility (or a separate wash area where DF's are not required) after each period of use. Each worker shall maintain a written log summarizing the date and period of use (in hours), times of inspection and cleaning, times of battery recharging (for PAPR's), and dates of any special repairs or maintenance. Such log shall be available for review-by the Engineer upon request.

4. Where PAPR's are used, each worker shall measure the respirator's flow rate (with a device acceptable to the manufacturer) before and after each period of use, and every four (4) hours of use where it is used for continuous periods longer than four (4)hours. Results of these flow rate readings shall be maintained by the worker in a written log, which shall be available for review by the Engineer on request.

5. The minimum respiratory protection required for this project is as follows:

   a. Negative pressure, half mask, air purifying respirators, equipped with HEPA filters for airborne lead dust levels not in excess of 0.5 mg/m3 (10 x PEL).

   b. Full face piece, powered air purifying respirators, with HEPA filters for airborne lead dust levels not in excess of 2.5 mg/m3 (50 x PEL).

   c. Pressure demand, full face piece, supplied air respirators, with HEPA filters for airborne lead dust levels not in excess of 50 mg/m3 (1000 x PEL).

   d. All workers inside the work area will wear the proper respirator for the lead dust level generated.

1.16 PROTECTIVE EQUIPMENT

A. The Contractor shall provide all workers and the Engineer with disposable coveralls, integral head and foot coverings, safety goggles and hard hats. Workers shall use the above protective equipment while inside any isolated lead-based paint abatement or removal work area; or where otherwise specified by the Engineer. Safety goggles with side shields will be worn when working with a material that may splash or fragment, or if protective eye wear is specified on the Material Safety Data Sheet (MSDS) for that product.

B. Disposal: Following each use, or whenever leaving the work area through a Decontamination Facility, the worker shall removal all disposable clothing and place it in a plastic bag designated for contaminated waste. Contaminated non-disposable protective gear and equipment shall not be removed from the work area until either fully decontaminated or packaged and disposed of as contaminated lead waste.
Non-disposable protective equipment, such as safety goggles, shall be decontaminated or properly packaged for re-use prior to exiting the work area DF (or a separate wash area where DF's are not required).

C. Supplies: The Contractor shall have available and provide, in addition to for is own personnel, six (6) full sets of protective equipment for the use of those individuals authorized by the Authority or Engineer.

1.17 TEMPORARY FACILITIES

A. Water or electrical service or both may not be present at the project site. If services are not available, the Contractor must provide these services. The Contractor shall provide temporary facilities as required herein or as necessary to carry out the abatement work. Locate temporary services and facilities where they will serve the entire project adequately and result in minimum interference with the performance of the Work. Relocate, modify and extend services and facilities as required during the course of work so as to accommodate the abatement work of the project.

1. Temporary Water Service Connection: Sufficient hot water for all workers shall be supplied by Contractor at a minimum temperature of 100 degrees F. Supply hot and cold water to the Decontamination Unit (or a separate wash area where DF's are not required) in accordance with Part 1.22.

2. Water Hoses: Employ heavy-duty abrasion-resistant hoses with a pressure rating greater than the maximum pressure of the water distribution system to provide water into each work area and to each Decontamination Unit (or a separate wash area where DFs are not required). Provide fittings as required to allow for connection to existing hydrants or spouts.

3. Hot Water Heater: Provide UL rated 40 - 80 gallon electric hot water heater to supply hot water for the Decontamination Unit shower. Wiring of the hot water heater shall be in compliance with NEC, Massachusetts modifications to the NEC, and UL standards.

B. Electrical Service: Comply with applicable NEC, Massachusetts modifications to the NEC, and UL standard and governing regulations for materials and layout of temporary electric service. Provide a weatherproof, grounded temporary electric power service and distribution system of sufficient size, capacity, and power characteristics to accommodate performance of work during the construction period. Install temporary lighting adequate to provide sufficient illumination for safe work and traffic conditions in every area of work.

1. Temporary Power: Provide service to Decontamination Unit sub panel with minimum 60 amp. 2 pole circuit breaker or fused disconnect connected to the main distribution panel. Sub panel and disconnect shall be sized and equipped to accommodate all electrical equipment required for completion of the work.

2. 17 Voltage Differences: Provide identification warning signs at power outlets which are other than 110-120 volt power. Provide polarized outlets for plug-in type outlets, to prevent insertion of 110120 volt plugs into higher voltage outlets. Dry type transformers shall be provided where required to provide voltages necessary for work operations.

3. Ground Fault Protection: Provide receptacle outlets equipped with ground-fault circuit interrupters, reset button and pilot light, for plug-in connection of all power tools and equipment used at the project site.

4. Power Distribution System: Provide circuits of adequate size and proper characteristics for each use. All lighting circuits and power receptacles, shall be GFI protected.

5. Temporary Wiring: In the work area shall be the type OF non-metallic sheathed cable located

overhead and exposed for surveillance. Do not wire temporary lighting with plain, exposed (insulated) electrical conductors. Provide liquid tight enclosures or boxes for wiring devices.

Provide overload-protected disconnect switch for each temporary circuit located at the power distribution center.

For power hand tools and task lighting, provide temporary 4-gang outlets throughout the Work Area. Provide a separate 110-120 Volt, 20 Amp circuit for Each 4-gang outlet (4 outlets per circuit).

6. Electrical Power Cords: Use only grounded extension cords; use "hard-service" cords where exposed to abrasion and traffic. Use single lengths or use waterproof connectors to connect separate lengths of electric cords, if single lengths will not reach areas of work.

7. Provide electrical outlets in the clean room, and at locations inside and outside the work area as specified by the Engineer for the exclusive use of the Engineer for air monitoring purposes.

8. Temporary power shall be installed by the Contractor.

C. Temporary Lighting: Provide general service incandescent lamps of wattage indicated or required for adequate illumination. Protect lamps with guard cages or tempered glass enclosures, where fixtures are exposed to breakage by construction operations. Provide exterior fixtures where fixtures are exposed to the weather or moisture. Provide the following where natural lighting does not meet the required light level:

1. One 200-watt incandescent lamp per 1000 square feet of floor area, uniformly distributed, for general construction lighting, or equivalent illumination of a similar nature.

2. In stairways and at ladder runs, provide lamp minimum per story, located to illuminate each landing and flight.

3. Provide sufficient temporary lighting to ensure proper workmanship everywhere; by combined use of daylight, general lighting, and portable plug-in task lighting.

4. Provide lighting in the Decontamination Unit as required to supply a 50 foot candle minimum light level.

D. Temporary Heating: Provide temporary heat where indicated or needed for performance of the Work. Provide temporary heating units that have been tested and labeled by UL, FM or another recognized trade association. Use of portable, electric fin radiation heaters with ground fault circuit interrupters is acceptable. Use of portable, forced air or fan type units may be positioned at the clean room entrance if air flow is directed into the work area and sufficient, filtered negative air machines are installed in the work area to control unfiltered work area emissions. Under no circumstances shall forced air or fan type units be utilized inside a work area.

1. Maintain a minimum temperature of 65 degrees F in the work area at all times that work is being performed.

2. If workers are going to be provided with warm clothing which will be kept in the Work Area and discarded at the end of the Work, maintain a minimum temperature of 50 degrees F in the Work Area at all times during removal work.

3. Maintain a minimum temperature of 70 degrees F in the shower of the decontamination unit (or

a separate wash area where DF's are not required).

4. No open fires or burning will be allowed.

E. Fire Extinguishers: Comply with the applicable recommendation of NFPA Standard 10 "Standard For Portable Fire Extinguishers." Locate fire extinguishers where they are most convenient and effective for their intended purpose, but provide no less than one extinguisher in each Work Area, in Equipment Room, and one outside Work Area in Clean Room.

1.18 FIRE PROTECTION AND FIRE PREVENTION

A. Fire Protection.

1. Fire protection apparatus shall be made available as soon as materials arrive at the site.

2. Adequate temporary fire protection shall be provided by the Contractor. Ample multi-purpose dry chemical portable fire extinguishers, having an extinguishing rating of at least 4A:40BC, shall be distributed to each individual work location. Pressurized water extinguishers of 2-1/2 gallon capacity shall supplement the multipurpose dry chemical extinguishers where welding and cutting operations are conducted. Fire fighting equipment shall be conspicuously located and readily accessible at all times, and be maintained in operating condition.

3. If warranted, fire alarm boxes, temporary telephones, or an alternate system shall be installed by the Contractor prior to the start of Work for use in transmitting fire alarms. Post the emergency phone number of the Boston Fire Department near all telephones (tel. 911).

4. Access for the fire department shall be provided and maintained readily accessible at all times.

B. Fire Prevention:

1. Flammable and Combustible Liquids

a. Only approved containers and portable tanks shall be used for storage and handling of flammable or combustible liquids. All containers and tanks shall be Underwriter's Laboratories listed. Safety cans shall be equipped with flame arresters.

b. Flammable and combustible liquids shall be kept in closed containers when not actually in use.

c. No more than one day's working supply shall be allowed inside a work area at any time. Flammable or combustible liquids shall be stored in approved flammable liquids storage cabinet with no more than 60 gallons of such liquid stored in any one cabinet. No more than three storage cabinets are to be located in a single storage area.

d. Conspicuous and legible signs prohibiting smoking or use of open flames shall be posted in areas where the liquids are being dispensed, used, or stored.

2. Compressed Gas Cylinders

a. Valve protection caps shall be in place when compressed gas cylinders are transported, moved, or stored.

b. Compressed gas cylinders shall be secured in an upright position at all times.

c. Oxygen cylinders shall be separated from fuel gas cylinders during storage. Separation shall be at least 20 feet or, if separation by this distance is not possible, the cylinders shall be separated by a five foot high partition having a fire resistance rating of a least 30 minutes.

d. Cylinders shall be kept at a safe distance or shielded from welding or cutting operations. Cylinders shall not be placed where they can contact an electrical circuit.

e. Boston Fire Department must be contacted and approve, in advance, the storage of gas cylinders. Storage of compressed gas cylinder shall be limited to the absolute minimum. Conspicuous and legible signs prohibiting smoking or use of open flames shall be posted in areas where oxygen or fuel gas cylinders are stored.

3. Hazardous Operations.

a. Hazardous operations shall not be performed until the necessary special fire protection (e.g., portable fire extinguishers, small hose) is in service.

4. Housekeeping.

a. Combustible waste material and rubbish shall not be stored or allowed to accumulate in the immediate vicinity of the work site, but shall be removed as rapidly as practicable, i.e., at least once a day and more frequently if conditions indicate the need.

b. Materials subjected to spontaneous ignition such as oily waste and paint rags shall be placed in approved self-closing waste containers after use and disposed of in accordance with all applicable laws each day.

c. Combustible materials shall be kept at a minimum by implementing a carefully scheduled plan for delivery of such material.

d. If crating and packing materials holding supplies and equipment are combustible, the equipment shall be uncrated and unpacked as soon as possible after arrival at the site. Combustible packing and crating shall be safely disposed.

5. Tarpaulins.

a. Only tarpaulins and materials with fire retardant characteristics as permitted by the Boston Fire Department shall be used for any projects.

b. When used for temporary enclosure, the enclosing material shall be fastened securely so it cannot be blown against heaters or other sources of ignition by winds and drafts.

6. Scaffolding, Shoring, and Forms.

a. Steel scaffolding or approved fire retardant treated lumber and planking shall be used on both the outside and the inside of the buildings.

b. Unnecessary accumulation of combustible forms or form lumber shall be avoided. Those portions of the building where combustible forms are present shall not be used for the storage of other combustible building supplies.

c. Fire extinguishing equipment shall be provided during forming and stripping. Charged hose lines shall meet this requirement.

7. Smoking.

a. Smoking shall be prohibited in Work areas and in the vicinity of hazardous operations or materials.

b. Where smoking is allowed, it shall be so noted, and safe receptacles shall be provided for smoking materials.

1.19 ELECTRICAL WORK

A. Safety Requirements.

1. All electrical work shall be in compliance with the most recent edition of the National Electrical Code, unless otherwise provided by OSHA regulations.

2. The non-current carrying metal parts of fixed, portable and plug-connected equipment shall be grounded.

3. Extension cords shall be the 3-wire type, and shall be grounded.

4. Safe temporary lighting equipment shall be provided. Exposed bulbs shall be guarded to prevent accidental contact. Temporary wiring shall be properly insulated and substantially supported. Circuits shall be properly designed and fused. All temporary lighting inside of lead removal areas shall be weatherproofed.

5. Portable tools and appliances protected by an approved system of double insulation need not be grounded.

6. Receptacles for attachment plugs shall be approved, concealed contact type. Where different voltages, frequencies, or type of current are supplied, receptacles shall be of such design that attachment plugs are not interchangeable.

7. Each disconnecting means for motors and appliances and each service feeder or branch circuit at the point where it originates shall be legibly marked to indicate its purpose.

8. All light and power circuits in lead-based paint removal areas shall meet OSHA requirements and be ground fault circuit protected

1.20 DECONTAMINATION FACILITY

(Where proposed in accordance with Part 1.03, Item A.5.d)

A. General Requirement: All workers exiting a work area, or equipment to be removed from a work area shall pass through and be fully decontaminated in a Decontamination Facility (DF) (or a separate wash area where DF's are not required). The DF shall consist of a series of two or more connected chambers including:

1. A Shower/Wash Room, with direct access from the work area to the Clean Room. This chamber shall contain at least one shower or wash station for workers or approved visitors, and cleaning apparatus for cleaning equipment, waste containers, or other contaminated items removed from the work area.

   Contractor shall be responsible for providing and maintaining hot water heaters at the shower/wash room in order to provide warm water during worker decontamination.

2. A Clean Room, with direct access to the Shower/Wash Room and the outside. This chamber shall include storage facilities for street clothing, clean contractor equipment, and protective gear.

3. Unless otherwise specified, the shower/wash room shall be contiguous to the work area. Non-contiguous, remote, three-chamber DFs may be substituted with the Engineer's prior written approval. Three-chamber DFs shall include an equipment room to be used for removal and temporary storage of contaminated worker clothing, equipment, and other items leaving the work area, prior to decontamination in the shower/wash room of the remote DF.

B. Construction: The Decontamination Facility shall be located within the work area (where feasible), and be constructed and maintained as specified in Par. 3.04(E).

C. Manner of Operation: All personnel shall enter the Clean Room, remove and store all street clothes, and put on clean protective clothing and respirators; then pass the Shower Room and enter the work area to put on any additional clothing and equipment if required. All personnel exiting the work area must remove, store and/or dispose of contaminated clothing and equipment in the work area, except respirators which must be removed in the Shower/Wash Room; shower and wash respirators; and then put on street clothes and store their cleaned respirators in the Clean Room.

D. Wastewater Disposal: All water from the shower or wash area shall be collected for testing to determine if it must be disposed of as hazardous waste.

E. Cleaning: The Decontamination Facility shall be cleaned using a HEPA-filtered vacuum and/or wet washing at least once every shift, or more frequently if needed to prevent residue accumulation.

F. Prohibition: Smoking, drinking, or eating shall not be permitted in the work area or Decontamination Facility. Personal equipment or property such as radios or flashlights shall not be permitted in the work area, Shower Room or Equipment Room unless they are capable of being fully washed in the Shower Room.

1.21 EXPOSURE CONTROLS AND HEPA-FILTERED EXHAUST VENTILATION

A. The Contractor shall install inside each work area one or more portable HEPA-filtered exhaust units as necessary in accordance with Part 1.03, Item A.5.d, to maintain the area, including the Decontamination Facilities or wash areas, under negative air pressure, and to reduce or control airborne lead concentrations. Unless otherwise permitted by the Engineer, exhaust systems shall be operated during all removal and cleanup tasks as specified herein.

B. Each exhaust unit shall be equipped as described in Part 2.02. Each unit shall be serviced by a dedicated minimum 115V-20A circuit with overload device tied into an existing building electrical panel which has sufficient spare capacity to accommodate the load of all negative pressure units connected. Dedication of an existing circuit may be accomplished by shutting down existing loads on the circuit.

C. The exhaust system must be capable of providing: 1) at least six (6) full air changes per hour in each

work area; 2) an inward velocity through any openings, including the decontamination facilities, of at least 300 fpm; and 3) a static negative air pressure inside the area of a minimum of 0.03 inches water column.

D. Determine number of units needed by dividing the ventilation requirement (CFM) above by capacity of exhaust unit(s) used. Capacity of a unit for purposes of this section is the capacity, in cubic feet per minute with fully loaded filters, (pressure differential which causes loaded filter warning light to come on) in the machines labeled operating characteristics.

Add a minimum of one (1) additional unit as a backup in case of equipment failure or machine shutdown for filter changing.

E. All exhaust air shall pass through HEPA-filters before being discharged outside of the containment system. The exterior exhaust discharge point shall be at least 40 feet from a receptor such as an air intake port, louvers, or entrances to an adjacent building.

F. Locate exhaust unit(s) so that makeup air enters work area primarily through decontamination facilities and traverses work area as much as possible. This may be accomplished by positioning the exhaust unit(s) at a maximum distance from the worker access opening or other makeup air sources.

G. If there are multiple sealed areas or partition walls within a work area, the exhaust systems shall be arranged so that air flows from the least to most contaminated area, and to prevent spaces from having poor or dead air movement.

H. Provide supplemental make-up air inlets where required for proper air flow through the work space in locations approved by the Engineer. Additional make-up air shall be delivered through horizontal shutters which open on make-up air inflow and seal on air flow cessation, or is delivered through a HEPA-filtered supply fan system.

1. Testing the System: Test the negative pressure system before any lead-containing material is removed. After the work area has been prepared, the decontamination

I. Facility set up, and the exhaust unit(s) installed, start the unit(s) one at a time. Demonstrate operation and testing of negative pressure system to the Engineer. Demonstrating and testing the operation of the negative pressure system will include, but not be limited to, the following:

1. Plastic barriers and sheeting move lightly in toward work area.

2. Curtain of decontamination units move lightly in toward work area.

3. There is a noticeable movement of air through the decontamination unit. Use smoke tube to demonstrate air movement from Clean Room to Shower Room, from Shower Room to Work Area.

4. Use a differential pressure meter or manometer to demonstrate a pressure difference of at least 0.03 inches of water across every barrier separating the Work Area from the balance of the building or outside.

5. The Engineer may use smoke generators to confirm that air flowing through all open areas is directed into the decontamination facilities and isolation barrier, and good air turnover conditions exist within the work area. If deficient air flows are reported to the Contractor, the Contractor shall cease work and promptly correct the deficiency.

J. Use Of System During Abatement Operations:

1. Start exhaust units before beginning -work (before any lead-bases paint is disturbed). After abatement work has begun, run units continuously to maintain a constant negative pressure until decontamination of the work area is complete.

K. On loss of negative air pressure or electric power, all work activities in an area shall stop immediately and shall not resume until power is restored and the BEPA-exhaust systems are operating again. When power failure or loss of negative pressure lasts, or is expected to last, longer than one hour, then the following, shall occur:

1. The make-up air inlets in the Decontamination Facilities shall be sealed airtight;

2. The Decontamination Facilities shall be sealed airtight after the evacuation of all personnel from the work area.

L. Monitoring: Continuously monitor and record pressure differential between the Work Area and the building outside the Work Area with a monitoring device incorporating a continuous recorder. Meter shall be equipped with a warning buzzer which will sound if pressure differential drops below 0.02" of water. The monitor will be located at a point acceptable to the Engineer. On a weekly basis, submit printout from pressure differential monitoring equipment. Mark printouts with location, date and start of time for each day. Use printout paper that indicates elapsed time in intervals no greater than hours. Indicate on each days record times of starting and stopping abatement work, type of work in progress, breaks for lunch and other purposes, breaks for lunch or other purposes, periods of stop work, and filter changes. Cut printouts into segments by day, attach to 8 1/2" x 11" paper. Label with project name, contractors name and date.

PART 2- PRODUCTS

2.01 GENERAL REQUIREMENTS

A. The Contractor shall deliver all materials and equipment to the site in the original containers bearing the name of the manufacturer, and details for proper storage and usage.

B. All materials or equipment delivered to the site shall be unloaded, temporarily stored, and transferred to the work area in a manner which shall not interfere with building operations.

C. Unloading and temporary storage sites, and transfer routes, must be reviewed in advance by the Engineer.

D. Damaged or deteriorated materials may not be used and must be promptly removed from the premises. Material which becomes contaminated with lead shall be packaged and legally disposed of in an approved, secure landfill.

E. All materials, tools, and equipment must comply, at a minimum, with this specification, and relevant Federal, State, and local codes.

2.02 MATERIALS, TOOLS, AND EQUIPMENT

A. HEPA-Filtered Exhaust Machines: Supply the required number of air filtration units to the site in accordance with these specifications. Each unit shall include the following:

1. Cabinet: Constructed of steel or other durable materials able to withstand damage from rough handling and transportation. Cabinet shall be factory sealed to prevent lead-containing dust from being released during use, transport, or maintenance. Access to and replacement of all air filters shall be from intake end.

2. Fans: Rate capacity of fan according to usable air-moving capacity under actual operating conditions. Use centrifugal-type fan.

3. HEPA Filters: The final filter shall be the HEPA type. The filter media (folded into closely pleated panels) must be completely sealed on all edges with a structurally rigid frame.

   a. A continuous rubber gasket shall be located between the filter and the filter housing to form a tight seal.

   b. Each filter shall be individually tested and certified by the manufacturer to have an efficiency of not less than 99.97 percent when challenged with 0.3 um dioctylphthalate (DOP) particles. Testing shall be in accordance with Military Standard Number 282 and Army Instructions Manual 136-300-175A. Each filter shall bear a UL586 label to indicate ability to perform under specified conditions.

   c. Each filter shall be marked with: the name of the manufacturer, serial number, air flow rating, efficiency and resistance, and the direction of test air flow.

4. Pre-filters, which protect the final filter by removing the larger particles, are required to prolong the operating life of the HEPA filter. Two stages of pre-filtration are required. The first-stage pre-filter shall be a low-efficiency type (e.g., for particles 10 um and larger). The second-stage (or intermediate) filter shall have efficiency (e.g.., effective for particles down to 5 um). Pre-filters and intermediate filters shall be installed either on or in the intake grid of the unit and held in place with special housings or clamps.

5. Instrumentation: Each unit shall be equipped with a Magnahelic gauge or manometer to measure the pressure drop across filters and indicate when filters have become loaded and need to be changed. A table indicating the usable air-handling capacity for various static pressure reading on the Magnahelic gauge shall be affixed near the gauge for reference or the Magnahelic reading indicating at what point the filters should be changed, noting Cubic Feet per Minute (CFM) air delivery at the point.

   Provide units equipped with an elapsed time meter to show the total accumulated hours of operation.

6. Safety and Warning Devices: The unit shall have an electrical (or mechanical) lockout to prevent fan from operating without a HEPA filter or with a filter installed backwards. Units shall be equipped with automatic shutdown system to stop fan in the event of a major rupture in the HEPA filter or blocked air discharge. Warning lights and audible alarms are required to indicate normal operation, too high a pressure drop across the filters (i.e., filter overloading), and too low of a pressure drop (i.e.., major rupture in HEPA filter or obstructed discharge).

7. Flexible metal hoses (ducts) of sufficient length must be provided to allow the units to discharge outside the containment system.

8. Electrical components shall be approved by the National Electrical Manufacturers Association (NEMA) and Underwriter's Laboratories (UL). Each unit shall be equipped with overload

protection sized for the equipment. The motor, fan, fan housing, and cabinet shall be grounded.

B. Vacuum Cleaning Equipment: Shall be industrial type designed for such use, equipped with High Efficiency Particulate Air (HEPA) filters. No other method will be permitted. Vacuuming equipment shall be Model GA72 or GA73 as manufactured by NILFISK of America, Inc.; Model CMP-1500-P as manufactured by Car-Mon Products, Inc.; equipment manufactured by J. D. Brophy, Inc. or approved equal. The equipment shall be properly operated at all times and shall contain no air leaks. The Engineer will inspect all vacuuming equipment prior to its use, and may request verification of the efficiency of the filtration. Each vacuum cleaner shall be emptied and thoroughly cleaned (inside the work area) at the conclusion of the project, or each use.

C. Respirator Protection Equipment: Shall be NIOSH-approved, and shall comply with all provisions of 29 CFR 1910.1025. A fit testing procedure and results of individual tests shall be submitted to the Engineer for approval for all passive air filtering respirators.

D. Polyethylene Sheet: Provide flame resistant polyethylene film that conforms to requirements set forth by the National Fire Protection Association Standard 701, Small Scale Fire Test for Flame-resistant Textiles and Films. Provide largest size possible to minimize seams, 6.0 mils thick as required, frosted or black as indicated.

E. Warning Signs and Labels: Shall be located and comply with all Federal, State, and local codes and regulations.

F. Waste Containers and Transportation: Shall be pre-labeled bags, drums, or other closed containers complying with Mass 454 CMR 22.08 (2)(f), suitable for loading, temporary storage, transit, and unloading of contaminated waste without rupture, causing exposure to persons or emissions to the atmosphere. Transportation and disposal methods shall comply with the provisions of EPA Title 40; US Department of Transportation Regulations 49 CFR; and DEP Regulations 310 CMR 30.00; and with any hazardous or special waste regulations for temporary storage, transport, and disposal in the cities where the waste will be generated, stored, transported or disposed of.

G. Duct Tape: Provide duct tape in 2" or 3" widths as indicated, with an adhesive which is formulated to aggressively stick to sheet polyethylene.

H. Spray Cement: Provide spray adhesive in aerosol cans which is specifically formulated to stick tenaciously to sheet polyethylene.

I. Sump Pump: Provide totally submersible waterproof sump pump with integral float switch. Provide unit sized to pump 2 times the flow capacity of all showers or hoses supplying water to the sump, through the filters specified herein when they are loaded to the extent, that replacement is required. Provide unit capable of pumping debris, sand, plaster or other materials washed off during decontamination procedures without damage to mechanism of pump. Adjust float switch so that a minimum of 3" remains between top of liquid and top of sump pan.

J. Ladders or Scaffolds - Shall be OSHA-approved, and be of sufficient dimensions and quantities so that all work surfaces can be easily and safely accessed by the Engineer, workers, and other inspectors. Scaffold joints and ends shall be sealed with tape to prevent incursion of lead dust.

K. Pressure-Differential Recorder - Provide air pressure sensing devices equipped with recorders for continuous monitoring of Work Area pressure differential. Provide sufficient quantities of chart paper and maintain devices until completion of work.

L. Two Way Radios - Provide General Superintendent and all Work Area Supervisors and Foremen with compatible two-way radios.

M. Caulking Materials: Shall be water-resistant silicone compounds or expansion foam as applications for an air and water-tight seal as required.

PART 3 - EXECUTION

3.01 SCOPE AND ORDER OF PREPARATION WORK

The Contractor shall prepare each work area as described in this section. Preparation Work shall be performed according to the following general sequence of procedures to insure that proper containment and protection systems are installed prior to any Work which could generate airborne lead dust:

A. Erect barriers, barricades, and access platforms as required and as approved by the Engineer.

B. Post access restriction signs in an approved location; seal all openings into the work area; and erect or install Decontamination Facilities and HEPA exhaust systems.

C. Obtain Engineer's formal approval for all preparation work before commencing other abatement tasks.

3.02 ISOLATION OF ELECTRICAL SYSTEMS AND INSTALLATION OF TEMPORARY POWER AND LIGHTING

A. The scope of the required electrical isolation and protection work includes isolation and protection of electrical equipment in areas where lead removal work must be performed, and could therefore possibly become a hazard. Shutdown of electrical circuits shall comply with Authority's lockout/tag out procedures. The Work shall also include providing labor to monitor, inspect, and service Contractor temporary power circuits, lighting, and equipment as required by local codes and regulations.

B. The electrical isolation work includes the shutdown of all electrical circuits in the affected areas and installation of temporary lighting and power with ground fault protection circuitry in accordance with all applicable codes.

C. Temporary lighting shall be provided by the Contractor in all work areas where lead-based paint removal is performed. A licensed electrician shall initially inspect all removal work areas to verify the condition of electrical conduit and junction boxes. The purpose of this inspection is to assist the Contractor in the preparation and performance of his Work, and for the safety of work crews.

D. All existing electrical equipment shall be de-energized in accordance with applicable electrical codes, cleaned and then wrapped with protective, 6-mil plastic.

E. Circuits for the affected permanent lighting shall be shut off from the associated lighting panels as identified by the Authority. Light systems not demolished or disconnected shall be returned on when removal work is finished and fixtures are unwrapped.

F. The Contractor shall be required to furnish, without additional expense, all transportation, labor and materials necessary to maintain the electrical systems for safe operation, and to maintain service in abutting work areas in compliance with all applicable codes.

G. All materials and workmanship shall conform with the latest editions of the following codes, standards and

specifications:

1. National Electrical Code (NEC) - most recent edition

2. National Bureau of Standards, Handbook H30, National Electrical Safety Code

3. State and Local Codes, and all other authorities have jurisdiction

4. Underwriter Laboratories (UL)

5. National Board of Fire Underwriters

6. OSHA

H. Temporary lighting and power systems shall comply with all OSHA, state and local regulations; temporary lighting levels shall meet OSHA requirements.

I. The Contractor is responsible for visiting the site (at no additional cost) to investigate and become familiar with existing electrical conditions and isolation requirements.

J. When switching circuits at panels, the Contractor's electrician shall review the existing directory. The Contractor shall not shut down any circuits without the advanced approval of the Authority.

3.02 ISOLATION OF WORK AREAS AND INSTALLATION OF DECONTAMINATION FACILITIES

A. Containment controls, including critical barriers, protective coverings, HEPA-filtered ventilation and Decontamination Facilities, may be required for LBP abatement work. The degree of containment shall be appropriate for the anticipated levels of airborne lead dust. The lower the level of airborne lead, the lesser the requirements necessary to control lead emissions at the job site, as specified in paragraph 1.03 (5) (d).

B. Work Area Isolation (unless exempted according to Paragraph A)

1. The Contractor shall isolate work areas for the duration of work by completely sealing off all openings in the work area. Isolation/scaling shall be accomplished by constructing critical barriers where necessary around the work area perimeter. The Work area shall be sealed airtight to the greatest extent possible, subject to the approval of the Engineer.

2. Provide temporary power and lighting (with ground fault circuit interrupt protection) to the work areas, and ensure safe installation of temporary power sources and equipment per applicable electrical code requirements, and OSHA requirements for temporary lighting in the environment normal to lead-based paint abatement work areas.

3. Install work area exhaust systems as specified in Section 3.06.

C. Access Restrictions: The Contractor shall restrict access to work areas to only his employees who have previously been identified to the Engineer or the Authority's Representative; or to those individuals approved by the Engineer or the Authority; or who have legal jurisdiction over the Work. The Contractor's Supervisor shall at all times monitor the entrance to the Decontamination Facility (or wash area depending on requirements) to prevent unauthorized people from entering.

D. Equipment and Services: The Contractor shall provide portable lighting, staging and scaffolding, utility

hook-ups, portable fire extinguishers, first aid equipment, and all other equipment or items for the safe and efficient performance of Work.

E. Decontamination Facility (DF):

1. The Contractor shall erect one or more Decontamination Facilities (if applicable) to serve each work area. The facility will consist of series of two or more connected chambers including, at a minimum, a clean room and a shower/wash room, separated by an air lock. Unless otherwise specified, the shower/wash room shall be contiguous to the work area. Non-contiguous, remote, three-chamber DFs may be substituted with the Engineer's prior written approval. Three-chamber DFs shall include an equipment room to be used for removal and temporary storage of contaminated worker clothing, equipment, and other items leaving the work area, prior to decontamination in the shower/wash room of the DF.

2. In all cases, non-emergency access between contaminated and uncontaminated rooms or areas shall only be through the Decontamination Facility/Wash Room.

3. Decontamination Facilities shall be maintained under negative pressure relative to clean areas by use of exhaust system(s) as described in Section 3.05 in accordance with Paragraph A of this section.

4. Ensure that barriers and linings are effectively sealed and taped at all lining, and that the Shower/Wash Room floor is completely watertight. Repair damaged barriers, and remedy defects immediately upon discovery. Visually inspect enclosures at the beginning of each work period. The Engineer will use smoke generators to test effectiveness of barriers and HEPA-exhaust systems.

3.04 WORK AREA EXHAUSTS

A. The Contractor shall install one or more portable HEPA-filtered exhausts to maintain all work areas, including the Decontamination Facility, under negative pressure, and to contain and reduce airborne lead dust concentrations.

B. The exhaust(s) shall be capable of providing at least 6 full air changes per hour in each work area, an inward velocity through any openings of at least 200 fpm, and a static negative air pressure of 0.03 inches water column.

C. All exhaust air must pass through a HEPA-filter before being discharged anywhere.

D. If there are multiple sealed areas within each work area, the exhaust systems shall be arranged so that air shall flow from the least to the most contaminated area.

E. The Engineer will use smoke generators to confirm that air is flowing, into the work areas. Deficient air flows will be immediately reported to the Contractor who shall cease Work and promptly correct the deficiency.

3.05 NOTIFICATION OF POLICE AND FIRE DEPARTMENT

A. Notify the local police and fire department of the lead abatement project. Coordinate with the police for all security aspects of the project, and with the fire department for all emergency evacuation and safety aspects. Where possible, secure acknowledgment from both the police and fire department that they have reviewed the established security and safety procedures.

3.06 APPROVAL OF PREPARATION WORK

A. After each work area has been prepared as specified above, the Contractor shall request a site inspection by the Engineer. Abatement Work activities will not be allowed until the Engineer has inspected and approved the site preparation Work.

3.07 LEAD-BASED PAINT REMOVAL

A. All existing painted metal surfaces shall be prepared such that the metal surfaces are made free of visible paint chips, dirt, and rust, and a profile satisfactory for the specified replacement coating is produced. The Contractor will be allowed to utilize any one or any combination of the surface preparation methods discussed below. The use of alternative surface preparation technologies (e.g. blast cleaning, pressurized water jetting, air abrasive wet blasting, surface encapsulation/ epoxy treatment) shall be restricted for use only with the prior written consent of the Engineer.

Hand and Power Tool Cleaning: Use of hand and power operated wire brushes, sanders, scrapers, vacuums, grinders, de-scalers, and or others appropriate devices.

Vacuum Blasting: Use of blast cleaning technology (abrasives propelled across a surface using compressed air) associated with a special vacuum assembly which forms a seal at the treated surface to create a closed blasting cycle. The abrasive (e.g., cast steel, malleable iron, or aluminum oxide) is automatically recirculated, cleaned of debris, and returned for reuse.

Wheel Blast Cleaning: Use of blast cleaning technology that propels abrasive to the surface using centrifugal force. This method also requires a special vacuum assembly and a seal at the treated surface to create a closed blasting cycle. The abrasive (e.g., cast steel, malleable iron, or chilled cast iron) is automatically recirculated, cleaned of debris, and returned for reuse.

Chemical Stripping: Use of a chemical paste containing alkaline or acidic solvent materials. The paste may be troweled or spray-applied to surfaces and covered with polyethylene sheeting. Paint will be absorbed by the paste which bonds to the polyethylene sheeting. The paint, paste, and sheeting is stripped away in a single step.

B. All debris generated as a result of surface preparation activities shall either be collected immediately at the point of cleaning (e.g., with an attached HEPA vacuum assembly), or from contaminated work area surfaces at regular intervals during each work shift.

C. At the completion of the scraping process and cleaning of the floors, the Contractor is responsible for washing down all surfaces with an approved cleaning agent such as Trisodium Phosphate to remove all visible dust.

3.08 WASTE HANDLING, PACKAGING, AND DISPOSAL

A. Removal of surface preparation debris from each work area into suitable storage containers must be carried out without releasing lead or other wastes into the environment. The Contractor shall coordinate with regional EPA, State, and local authorities to assure lead-based paint debris disposal requirements are fully complied with. During the actual abatement, the Contractor shall not incinerate debris, dump waste by the road or in an unauthorized dumpster, or introduce lead-contaminated water into storm (will not be flushed down street drain) or sanitary sewers.

Testing of LBP abatement waste materials shall be performed in accordance with test procedures and

quality assurance requirements designated in 40 CFR Part 268, Appendix 1, EPA Method 131 1, Toxicity Characteristics Leaching Procedures (TCLP). Testing will be performed by a laboratory approved by the Engineer, at the expense of the Contractor. Sample collection shall be conducted by the Contractor as described below, under direct observation by the Engineer. Test results shall be supplied to the Engineer upon receipt by the Contractor.

1. Waste Sampling. Representative waste samples shall be collected in accordance with the Contractor's approved waste sampling plan (Submittal 5.f.) and the Steel Structures Painting Council (SSPC) Guide for the Disposal of Lead-Contaminated Surface Preparation Debris (Guide 71 (DIS) SSPC 92-07), Section 5.6, Sampling.

B. The following materials will be tested (at a minimum) to determine hazard classification:

1. LBP removal waste and associated debris

2. waste water

3. dust from HEPA filters and from damp sweeping

4. solvents and caustics used during the stripping process

5. liquid waste, such as wash water used to clean after solvents have been used

6. rags, sponges, mops, HEPA filters, respirator cartridges, scrapers, and other materials used for testing, abatement and clean up

7. disposable work clothes and respirator filters

8. any other items contaminated with lead-based paint

9. demolition waste coated with lead

D. Disposal of Hazardous Waste

1. The Contractor shall comply with the Resource Conservation and Recovery Act (RCRA) requirements as designated in 40 CFR Parts 260 through 268, and with the provisions of Section 6.1. Unless the LBP waste materials are determined practical for re-use or alternative use, all such wastes with leachable lead levels in excess of 5 ppm shall be managed as hazardous waste. ThE Contractor is responsible to make all necessary preparations (as described below) to dispose any hazardous wastes generated as a result of the LBP removal operations.

2. The Contractor shall apply, on the behalf of the Authority, for a site specific EPA identification number from the appropriate Regional EPA office. The Authority will be considered the hazardous waste generator for the purposes of the project. Hazardous waste generated at the project site shall not be transported or disposed of without the ID number. The Contractor shall designate the Owner as either a large quantity generator (1000 kg/month) or a small quantity generator (100 kg/month but < 1000 kg/month) depending on the projected amount of hazardous waste to be generated.

3. Waste Containers. The Contractor will comply with EPA and DOT regulations for containers. The Contractor shall contact the state and local authorities to determine their criteria for containers (the more stringent regulation shall apply). Leakproof drums or portable bins fitted with secure

covers should be considered minimum container requirements.

4. Waste Labeling. Weather resistant labels outlining the potential hazards associated with LBP waste materials must be affixed to each waste container. Container labels should specify contents, container tare weights, point of waste generation, date of collection, and reference key to samples collected. Waste containers shall be arranged so that the labels are visible at all times.

5. Waste Storage (On-site). Movement of waste from the work area to the on-site storage area shall be performed by the Contractor using suitable precautions to prevent any spillage. Waste storage containers must be moved to well drained grounds and out of flood plains or areas where run-off may occur (40 CFR Part 264.18).Drums shall be placed on pallets to prevent corrosion. Waste storage areas must be segregated from equipment storage areas and enclosed with a prominently posted barrier or fence to protect from unauthorized access by the public (40 CFR Part 264.14). The length of time that hazardous waste may remain on-site is dependent upon the amount of waste being generated.

   a. Large Quantity Generators (1000 kg per month) Maximum accumulation period is 90 days (additional 30 days may be granted at the discretion of the Regional EPA Administrator).

   b. Small Quantity Generator (100 kg but < 1000 kg per month) Maximum accumulation period is 180 days unless waste will be hauled 200 miles for treatment/ disposal in which case the time is extended to 270 days.

      Waste generators who exceed the above-stated time limits will be considered operators of hazardous waste storage facilities, and directed to comply with regulations designated in 40 CFR Parts 264 and 265.

6. Waste Manifesting. The Contractor shall prepare a waste manifest in accordance with 40 CFR Part 262.20 using U.S. EPA Form 8700-22 and or the appropriate Massachusetts State manifest form.

7. Waste Transportation (Off-site). Transportation to an off-site storage area (temporary or permanent) must proceed in accordance with 40 CFR Part 263. If the Contractor is not a certified hazardous waste transporter, a contract shall be entered into with a certified transporter to move the waste. The Contractor shall require the certified hazardous waste transport to follow RCRA regulations.

8. Waste Disposal. The Contractor shall ensure that all wastes are properly disposed of at the primary disposal site for lead-based paint waste as identified by Submittal No. 11 and approved by the Authority.

E. Supplemental Requirements for Disposal of Hazardous and Non-Hazardous Solid Waste

1. The Contractor shall place lead-based paint chips, debris, and lead dust in double (4-mil) or single (6-mil) polyethylene bags that are air-tight and puncture-resistant.

2. The Contractor will place all disposable cleaning materials, such as sponges, mop heads, filters, disposable clothing, and brooms in double (4-mil) or single (6-mil) plastic bags and sealed.

3. The Contractor shall clean surfaces and equipment and bag large debris. The Contractor shall then remove plastic sheeting and tape from covered surfaces. Prior to removing the plastic

sheeting, the Contractor shall lightly mist the sheeting in order to keep dust down and fold inward to form tight, small bundles to bag for disposal. The Contractor shall place all plastic sheeting in double (4-mil) or single (6-mil) thick plastic bags and seal.

4. The Contractor shall bag and seal vacuum bags and filters in double (4-mil) or single (6-mil) thick plastic bags.

5. The Contractor shall place all contaminated clothing or clothing covers used during abatement and cleanup in plastic bags for disposal prior to leaving equipment room.

6. The Contractor shall place solvent residues and residues from strippers in chemically resistant drums. Waste solvents and strippers shall be tested by the Contractor to determine if they must be managed as hazardous wastes in accordance with Federal and State requirements. Solvents and caustic and acid wastes must be segregated and stored in separate containers.

7. The Contractor shall contain and properly dispose of all liquid waste, including lead dust contaminated wash water.

8. The Contractor shall HEPA vacuum the exterior of all liquid waste containers prior to removing the waste containers from the work area and shall wet wipe the containers to ensure that there is no residual contamination. Containers should then be moved out of the work area into the designated storage area.

9. The Contractor shall carefully place the containers into the truck or dumpster used for disposal.

10. The contractor shall ensure that all waste is transported in covered vehicles to a landfill, or lined landfill, if available.

11. If the Contractor sub-contracts the removing of the lead-based paint waste, he shall insure that the company removing the waste material adequately covers all loads so as to assure that no dust or debris is released.

3.09 CLEANING METHODS AND APPROVALS

After all LBP has been removed, the Contractor shall perform a thorough cleanup and decontamination of the work facility, or protective coverings. Cleaning shall be subject to the Engineer's approval based on a visual inspection (including surface dust wipe tests).

A. All waste containers and Contractor's equipment shall be thoroughly cleaned with a HEPA-filtered vacuum, cleaned in the Shower/ Wash Room, and then removed from the work area.

B. All protective coverings on ceilings, walls, and floors in the work area shall be wiped clean and/or thoroughly decontaminated with a HEPA-filtered vacuuming device.

C. After the Contractor has completed steps (A) and (B), he/she shall request the Engineer to visually inspect the site.

D. If the Engineer observes any lead-based paint waste, debris or dust within the work area during the inspection, the Contractor at no additional cost shall perform additional cleanup and decontamination as required. .

E. Once contaminated items have been properly packaged and removed from the work area (as contaminated waste), the Contractor shall conduct a very thorough final cleaning of all surfaces to ensure that all LBP debris is removed from surfaces. Workers shall be careful not to walk over or otherwise re-contaminate surfaces that have already been cleaned.

F. Workers shall wear approved respiratory and personal protective equipment throughout all cleanup and waste disposal activities.

PART 4 - MEASUREMENT AND PAYMENT

4.01 GENERAL

No separate measurement or payment will be made for work required under this Section. All costs in connection therewith shall be included in the Contract lump sum price for Remove Lead Paint (Item No. 0212.153), including all equipment, accessories and incidentals.

4.02 PAYMENT ITEMS

Item No.	Payment Item	Unit
0212.152	Remove Lead Paint	Allowance

END OF SECTION

SECTION 02100

SITE PREPARATION

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section specifies site preparation in accordance with Standard Specifications Construction Section 02100, except as modified herein.

1. Clearing, grubbing, and disposal of vegetation, including buses, brush, trees, utility poles, pole mounted utility cabinets, chain-link fence, stumps, fallen timber, logs, roots, rubbish, refuse, trash, and debris within the limits of work except those indicated by the Engineer to be retained and protected.

A. Removal and disposal of trees as shown on the Drawings. The Contractor must provide all necessary protection to prevent any damage to the adjacent MBTA tracks, power and catenary systems, signal systems, adjacent streets and abutting properties.

3. Removal, salvage, or other disposition of curbs and gutters, MBTA signs, traffic and street signs, fences, pavement markings, parking meters and other miscellaneous structures and site furnishings which interfere with construction, as indicated on Drawings, or as required by the Engineer. The Contractor shall remove store and reinstall two wood ramp systems. The Contractor shall remove wood rail crossing and sand bin as indicated on the drawings.

4. Furnishing and installing Project Identification Signs as specified in Section 01580.

5. Furnishing and installing temporary traffic control signage and devices during construction as indicated on the Drawings and as specified in Section 01570.

B. Demolition of structures as specified in this Section includes but is not limited to:

1. Phased excavation and backfill of existing platforms and timber, concrete, or granite edge.

2. Demolition and removal of items and backfill of foundations and any associated conduits, pipes or duct bank for existing signs, light fixtures, track drains, emergency call boxes, control cabinets, signal poles, bollards, benches, planters, trash receptacle, shelters, sand bins and token dispensers to be removed.

3. Alteration, removal and off site disposal of existing timber, bituminous concrete, concrete or rubber grade crossings, and other platform associated items within the limits of new platform construction..

4. Saw cutting, removal and off site disposal of existing concrete platform curbs, timber edge, concrete, bituminous pavement not indicated to be recycled, concrete bumpers, wood posts, abandoned signal and control boxes and other work indicated on the Drawings to be removed or which would interfere with the new construction.

5. Demolition and disposal of existing passenger shelter foundations.

E. Removal and stacking of existing structures includes but is not limited to:

1. Removal and stacking of MBTA signs, miscellaneous site furnishings and elements as shown on the Drawings. The Contractor is responsible for protecting, and transporting site elements to a MBTA yard (Charlestown), MHD yard, Town of Brookline or to storage within 20 miles of the job as directed by the Engineer.

2. The Contractor shall return existing site furnishings which are owned by the MBTA to the Authority as directed by the Engineer.

F. Removal and relocation, and adjusting (remove and reset) of existing structures and site elements includes but is not limited to:

1. Disconnecting light poles, protecting and transporting poles and luminaries to the Contractor's yard. Also transporting the poles from the yard and resetting the poles as shown on the Drawings, relocating light poles, furnishing and placing concrete footings and adjusting light poles as specified in Section 16050 and indicated on the Drawings.

2. Disconnecting emergency call box, placing concrete footings and relocating box as specified in Section 16050 and as indicated on the Drawings.

3. Removing, placing concrete footings and resetting MBTA token machines in accordance with the Massachusetts Bay Transportation Authority standards, to locations as indicated on the plans and directed by the Engineer.

4. Removal and temporary storage onsite of existing sign frames and post and miscellaneous site furnishings.

5. Removing, placing concrete footings and resetting MBTA station signage in accordance with the Massachusetts Bay Transportation Authority standards and as directed by the Engineer.

G. Removal, temporary storage of wooden passenger shelters and reinstallation on reconstructed foundations includes but is not limited to:

1. Disconnection of existing structures from their foundations and moving to allow for reconstruction of structure foundations.

2. Raising and reconstructing existing structure foundations to the elevations and details shown on the drawings.

3. Lowering and reconnecting of the existing structures on the reconstructed foundations and restoration of structure finishes.

4. Reinstallation of existing electrical connections into the reset structures.

H. Build and maintain accessible pedestrian paths at all times during construction. Build and maintain temporary bituminous concrete platforms with timber edges as shown on the plans and as directed by the Engineer. Remove temporary platform after the permanent platform is constructed.

I. Before proceeding with construction or demolition work, on, over or adjacent to the Authority's property, a preconstruction meeting shall be held at which time the Contractor shall submit for approval by the Authority, plans, computations, and a detailed description of his method of procedure for accomplishing the construction work required under this Contract, including methods of protecting light rail traffic; however, such approval shall not serve in any way to relieve the Contractor of his complete responsibility for the adequacy and safety of his methods of procedure.

J. Related work: Related requirements are included in, but not limited to, the following Sections:

I. Section 01570: TRAFFIC REGULATION
II. Section 02200: EARTHWORK
III. Section 02800: EXTERIOR CONDUIT SYSTEM
IV. Section 03100: CONCRETE FORMWORK
V. Section 03200: CONCRETE REINFORCEMENT
VI. Section 03300: CAST-IN-PLACE CONCRETE
VII. Section 16050: BASIC MATERIALS AND METHODS FOR ELECTRICAL WORK

1.02 SUBMITTALS

B. For each station submit a demolition and staging plan to the Engineer, describing the proposed sequence, methods, and equipment for demolition and construction, and the disposal of materials.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Conduit, cable and miscellaneous electrical equipment shall meet the requirements of the Owner of the site elements relocated and as specified in Sections 16050 and 16450.

B. Concrete for footing and grout for leveling shall meet the requirements of the Owner of the site elements relocated and as specified in Section 03300.

PART 3 - EXECUTION

3.01 PROTECTION

D. During the demolition procedure, the Contractor shall provide an approved shield to prohibit debris from falling onto the rail right-of-way.

E. The Contractor shall maintain and protect vehicle and pedestrian traffic on roadways, intersections and sidewalks. The Contractor shall provide and maintain temporary accessible wheelchair and pedestrian paths throughout construction. The paths shall comply with ADAAG and MAAB codes.

F. The Contractor shall maintain and protect rail traffic during normal operating periods.

3.07 PLATFORM DEMOLITION

A. Construct temporary platforms, furnish and install required items as indicated on the Drawings or as directed by the Engineer prior to demolition of the existing platforms. The actual location of the temporary platform may vary in the field depending upon the Engineer's determination.

3.08 SHELTERS TO BE RESET

A. The Contractor shall disconnect all utility services and remove and store onsite existing site furnishings associated with the structure to be reset or reinstalled prior to removing or lifting the structure.

B. The existing passenger shelters shall be braced and partially disassembled to access existing structure connections to its foundations.

C. Each structure shall be disconnected from its foundation and temporarily moved and stored onsite as indicated on the Drawings. The storage area shall be approved by the Engineer.

D. The existing foundations shall be demolished and removed and new foundations shall be constructed to the requirements on the Drawings.

E. Each existing structure shall be removed from storage and reset on its new foundations as indicated on the Drawings.

F. Temporary bracing shall be removed, utility services reconnected, interior and exterior finish elements reinstated such that final appearance of the structure reasonably replicates its original character. Restoration work shall conform to requirements specified in Section 06410.

G. The structure interior and exterior and surrounding area shall be cleaned.

3.09 MISCELLANEOUS FOUNDATIONS

A. Concrete foundations for MBTA signs, light poles, and traffic signal poles shall be removed to at least 3 feet below the grade or as directed by the Engineer in the field and backfilled with compacted gravel.

B. Other foundations for miscellaneous items to be removed or relocated shall be removed completely and backfilled with compacted gravel.

C. Foundations for light poles and control cabinets shall be constructed in accordance with the drawings.

3.10 DISPOSAL OF MATERIALS

A. The Contractor shall remove, transport and dispose of all excavated materials and debris in

accordance with local, State and Federal laws, regulations and requirements; and in accordance with requirements in Section 02200.

B. Remove debris accumulations daily.

C. Reuse acceptable excavated materials only as approved by the Engineer.

PART 4 - MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

A. Separate measurement will not be made for the work of this Section, complete in place, but all costs shall be included in the Contract Lump Sum Price for Site Preparation for the work as indicated, except as specified in the following.

B. No separate measurement or payment will be made for demolition and removing site elements within the limits of work.

C. No separate measurement or payment will be made for removing and resetting or removing and stacking site elements as indicated on the Drawings.

D. Removal of existing light poles, stacking at the Contractor Yard, moving and installing new foundations with anchor bolts, and resetting poles complete in place will not be separately measured but all costs in connection therewith shall be included in the Contract Lump Sum price for Site Preparation.

E. No separate measurement or payment will be made for temporary platform construction and removal. Furnishing and installing timber tie edge, will not be separately measured but all costs shall be included in the Contract Lump Sum price for Site Preparation.

F. Removal and resetting of the existing curbing will be measured and paid for under Payment Item No. 0262.701 as specified in Section 02525.

G. Removal and resetting of the existing passenger shelters will be measured under Payment Item 1076.021 Passenger Shelter – Remove and Reset.

4.03 PAYMENT

A. Payment for Site Preparation shall be made at the Contract Lump Sum price under Item No. 0220.098 Site Preparation.

B. Payment for Removing and Resetting Passenger Shelters shall be made at the Contract Unit Price under Payment Item 1076.021 – Passenger Shelters – Remove and Reset. Such price shall include but not be limited to all costs of shelters associated with disconnecting utilities; disconnecting, removing and storing onsite for gaining access to and disconnecting the shelters from their foundations; temporarily bracing the shelters; raising them off their foundations in place; temporarily supporting the shelters in place; reconstruction of the shelter foundations; removing the temporary supports and lowering the shelters onto their new foundations;

reinstatement of anchors to the foundations; removal of temporary bracing; reconnecting of utilities; restoration of interior and exterior finish elements and finishes and cleaning the shelters and their environs. The demolition of the existing shelter foundations shall be included in Payment Item No. 0220.098 – Site Preparation.

4.04 PAYMENT ITEMS

Item No.	Description	Unit
0220.098	SITE PREPARATION	LUMP SUM
0222.003	UNCLASSIFIED EXCAVATION	CUBIC YARD
0262.701	CURBING – REMOVE AND RESET	LINEAR FOOT
1042.100	SIGNS REMOVED AND RESET	EACH
1076.021	PASSENGER SHELTER - REMOVE AND RESET	EACH
1600.150	SITE ELECTRICAL WORK	LUMP SUM

END OF SECTION

SECTION 02200

EARTHWORK

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section specifies earthwork in accordance with Standard Specifications Construction Section 02200, except as modified herein. The Work includes excavation; placement of backfill; construction of embankments; disposal of surplus excavated material; and fine grading and compacting.

D. Related Work. Related Sections include but are not limited to, the following:

1. Section 01567: HEALTH AND SAFETY PLAN
2. Section 02100: SITE PREPARATION
3. Section 02400: DRAINAGE AND SEWER SYSTEMS
4. Section 02513: BITUMINOUS CONCRETE PAVEMENT
5. Section 02525: GRANITE CURBING AND EDGING
6. Section 02800: EXTERIOR CONDUIT SYSTEMS
7. Section 02900: FULL DEPTH RUBBER PEDESTRIAN GRADE CROSSINGS

1.02 CLASSES OF EXCAVATION

A. Unclassified Excavation:

1. Removal of materials other than contaminated soil, hazardous soil and hazardous waste regardless of the nature of the material encountered, the moisture content thereof, and type of equipment required for excavating; and the disposal of excavated material not required or not suitable for backfill and embankment.

2. Materials include, but are not limited to, earth; muck; bituminous and cement concrete sidewalks, walls and foundations; curbs and roadway pavements; timber; rails, ties, concrete encased ties, ballast, ballast fines, cobble stones; stumps; the removal and disposal of fences not required for reuse, materials from previous constructions that is no longer required. The work will include test pits as required by the Engineer.

3. The work shall include necessary saw cutting, shaping and cleaning of the undisturbed contiguous portions of surfaces to a neat line to insure a proper bond between the old and new construction, and shall be performed at no additional compensation. Where a new pavement meets existing pavement, the joint shall be saw cut to a neat, vertical line.

4. Concrete and masonry structures removed without the use of rippers or hand power tools such as jack hammers.

C. Rock Excavation

1. Class A Rock Excavation: Removal of any of the materials listed in paragraph 3 below when encountered within the limits of structure excavation, subway excavation, or roadway excavation; and the disposal of excavated material not required or not suitable for embankment and backfill.

2. Class B Rock Excavation: Removal of any of the materials listed in paragraph 3 below when encountered within the limits of trench excavation or when excavating for fences, highway guard rail, posts, and bounds; and the disposal of excavated material not required or not suitable for embankment and backfill.

3. Materials: Removal of the following materials is classified as rock excavation:

   a. Solid rock which cannot be excavated without blasting, use of rippers, or breaking with hand power tools such as jackhammers for removal.
   b. Boulders ½ cubic yard or more for Class B rock excavation and one cubic yard or more for Class A rock excavation, that require blasting for removal.
   c. Masonry and concrete structures and pavements which require blasting, use of rippers, or hand power tools such as jackhammers for removal.

1.04 SUBMITTALS

A. Submit in accordance with SUBMITTALS, Section 01300.

B. Gradation Test Reports

1. All borrow material
2. All backfill material
3. All bedding and crushed stone material

PART 2 - PRODUCTS

2.01 MATERIALS

C. Gravel Borrow (Gravel): Inert, hard, durable stone and coarse sand, free from loam, clay, surface coatings, and deleterious materials, conforming to the following:

Sieve	Percent Passing by Weight
2 inch	100
½ inch	50-85
No. 4	40-75
No. 50	8-28
No. 200	0-8

D. Sand Borrow: Clean, inert, hard, durable grains of quartz or other hard durable rock, free from loam, clay, surface coatings, or other deleterious materials; having not more than 10 percent passing a No. 200 sieve, with maximum particle size as follows:

B. Type B: 3/8 inch

G. Ballast: Conform to Section 02850 TRACK CONSTRUCTION.

H. Stone dust: Stone screenings from a stone crusher that completely passes a No. 4 sieve and not less than 40% passes a No. 8 sieve.

I. Geotextile Filter Fabric:

1. Filter Fabric will be woven or non-woven fabric consisting of long chain polymeric filaments which retain their relative position to each other. The cloth will conform to the properties listed in the following table:

Property	Test Method	Minimum Requirement
Grab Tensile Strength, lbs.	ASTM D4632	180
Equivalent Opening Size,	ASTM D422	70 - 100 U.S. Std. Sieve

G. Impervious Fill: Select fill consisting of well-graded soil classified as SM, SC, SC-SM, ML, CL or CL-ML under the soil classification system as defined in ASTM D2487. Regardless of classification, the select fill shall contain a minimum of 15 percent passing the No. 200 sieve and shall have no particles larger than 3 inches as measured in the largest dimension. Poorly graded or gap graded materials will not be permitted.

PART 3 - EXECUTION

3.01 GENERAL REQUIREMENTS

I. Protection of Survey Control Points: The Contractor shall protect and maintain existing survey ties and reference points.

3.02

C. Removal of unknown subsurface structures or obstructions ½ cubic yard or more shall be classified as Rock Excavation.

3.03 EXCAVATION

A. General Requirements

1. Excavate to the lines and grades indicated on the Drawings.

a. Exercise care during excavation work to avoid damaging the existing structures, manholes, duct lines, poles, foundations, and other structures/appurtenances /improvements.

E. Test Pits

1. Test pits will be required to locate underground services where directed by the Engineer. The Contractor shall take care during this excavation to avoid damage to

underground structures or utilities. When necessary the Contractor shall cooperate with representatives of public service companies in order to avoid damage to their structures/utilities.

2. Pavement shall be saw cut for test pits prior to the start of excavation.

3. When the Contractor is required to excavate for a test pit through pavements, he shall make as small a test pit as possible. After the Contractor obtains the information required, he shall backfill the test pit with suitable material conforming to this Section 02200. The test pit shall be brought to the proper grade, with the last 6 inches being bituminous concrete conforming to Section 02513 or cement concrete conforming to Section 03300 and Section 03310, whichever is applicable.

3.06 GRADING AND COMPACTING

D. Prior to the placement of proposed pavement structures, compact the existing subgrade or subbase to a minimum 95% of the maximum dry density of the material.

3.07 BALLAST PLACEMENT

A. Ballast Placement shall be in accordance with TRACK CONSTRUCTION, Section 02850.

3.08 DISPOSAL OF EXCAVATED MATERIALS

I. Removal and off-site disposal of the excavated materials shall conform to local, State and Federal laws and regulation and in accordance with requirements in Sections 02100 and 02201.

3.09 FLOOD CONTROL BERM RESTORATION

A. Remove existing bituminous concrete pavement, topsoil, organics within the limits of levee restoration shown on the drawings. Backfill and compact with impervious fill to the line and grade shown. Minimum elevation of compacted impervious fill shall match highest existing elevation of walkway at levee. Install 4 inches of loam and hydroseed immediately to prevent erosion.

PART 4 - MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

A. Except as specified below no separate measurement or payment will be made for work required under this Section. All costs in connection therewith shall be considered incidental to the item of work to which they pertain.

1. Unclassified Excavation will include Earth Excavation, Muck Excavation and test pits and will be measured by the cubic yard for additional quantities resulting from modifications to details shown on the Drawings, and for handling, transportation and disposal of such amount of materials.

2. Gravel borrow will be measured by the cubic yard complete and in place for subbase under sidewalk and roadway pavement where existing materials is not available and for

additional quantities resulting from modifications to details shown on the Drawings.

3. Sand borrow will not be measured separately, but will be considered incidental to the item which it pertains.

4. Rock excavation Class A or Class B will be measured by the cubic yard, removed and disposed of.

5. Trench excavation and backfilling will not be measured separately, but will be considered incidental to the work to which it pertains including but not limited to, drainage pipe, conduits, structures and platform work.

I. Ballast placement will be measured by the ton, installed and complete in place.

J. Disposal of surplus and unsuitable material will not be measured separately, but will be considered incidental to the item of work to which it pertains.

M. Fine grading and compaction shall not be measured separately but will be considered incidental to the item of work to which it pertains.

4.02 PAYMENT

F. Unclassified Excavation for the quantities as specified will be paid for at the Contract Unit Price for UNCLASSIFIED EXCAVATION, Payment Item No. 0222.003.

G. Gravel Borrow for the quantities as specified will be paid for at the Contract Unit Price for GRAVEL BORROW, Payment Item No. 0222.504.

H. Rock Excavation for the quantities as specified will be paid for at the Contract Unit Price for ROCK EXCAVATION, Payment Item No. 0222.108.

I. Ballast placement will be paid for at the Contract Unit Price for STONE BALLAST, Payment Item No. 0222.614.

4.03 PAYMENT ITEMS

Item No.	Description	Unit
0222.003	UNCLASSIFIED EXCAVATION	CUBIC YARD
0222.108	ROCK EXCAVATION	CUBIC YARD
0222.504	GRAVEL BORROW	CUBIC YARD
0222.614	STONE BALLAST	TON

END OF SECTION

SECTION 02400

DRAINAGE AND SEWER SYSTEMS

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section specifies the requirement for modifications to the existing storm drainage and sewer system as indicated on the Contract Drawings in accordance with the Standard Specifications Construction Section 02400, except as modified herein.

B. This Section also specifies the requirement for construction of new structures, catch basins with grates and granite curb inlets, track drains with covers, changing type of structures and pipes to be constructed as indicated on the Drawings.

C. The storm drainage and sewer systems will be constructed using materials and methods in accordance with the Town of Brookline's Standards and Massachusetts Highway Department Standards.

D. Related work: Related requirements are included in, but not limited to, the following Sections:

1. Section 02100: SITE PREPARATION

2. Section 02200: EARTHWORK

3. Section 02650: EXISTING SITE UTILITIES

4. Section 03300: CAST-IN-PLACE CONCRETE

E. The track drainage system shall be constructed using materials and methods in accordance with the MBTA standards.

PART 2 - PRODUCTS

2.01 GENERAL

B. All concrete pipe shall be reinforced, Class V.

C. Catch basin frames and grates and manhole frames and covers shall conform to City of Brookline Standards.

D. Catch basins constructed of concrete block, shall conform to the Massachusetts Highway Department Standard Specification.

E. Corrugated steel pipe shall be 2-2/3" x ½" corrugations with a wall thickness of 0.079", with a coating of aluminized steel type2. The invert shall be asphalt paved.

PART 3 - EXECUTION

3.01 GENERAL

G. Construct concrete block catch basins to be substituted for precast structures at locations as directed by the Engineer.

3.05 INSTALLATION PIPE

C. If there is a conflict between the proposed pipe and/or drainage structures and existing underground utilities or pipes, the Contractor shall arrange to have the slope and/or location of the pipe, drainage structure or utility line adjusted as approved by the Engineer.

3.09 TRACK DRAIN CASTINGS

For track drains provided with bolt down castings, bolts to secure grate and cover frames to structures shall be 3/4-inch bolts of galvanized steel of length necessary to secure the fame to the structure and yet allow for proper adjustment of the frame and cover or grate as necessary.

PART 4 - MEASUREMENT AND PAYMENT

4.01 GENERAL

A. No separate measurement or payment will be made for the Work required under this section. All costs in connection therewith shall be considered incidental to the item of work to which drainage and sewer systems pertain.

END OF SECTION

SECTION 02444

CHAIN-LINK FENCE AND GATES

PART 1 - GENERAL

1.01 DESCRIPTION

A. This specification specifies the furnishing and installation of chain-link fence and gates of the following types, in accordance with Standard Specification Construction Section 02444, except as modified herein.

1. The work will include removing and discarding existing chain link fence fabric. Cleaning and painting existing fence posts, top rail and bottom rail. Providing and installing colored PVC coated steel fabric.

2. The work will include providing and installing chain link fence at locations indicated on the drawings.

B. Related Work: Related requirements are included in, but not limited to, the following Sections:

1. Section 02100: SITE PREPARATION

2. Section 02200: EARTHWORK

3. Section 03300: CAST-IN-PLACE CONCRETE

PART 2 - PRODUCTS

2.01 MATERIALS: AASHTO M181, with the additions and modifications specified herein.

L. Concrete Footing: Conforming to Section 03300 CAST-IN-PLACE CONCRETE, Class 3000 psi.

PART 3 - EXECUTION

3.01 INSTALLATION:

K. Where the new fence abuts the existing fence, an end post shall be provided, or as directed by the Engineer.

PART 4 - MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

A. Modify existing chain link fence and gate will be measured by the linear foot, complete in place, parallel to the finished grade from center to center of end posts.

B. Chain link fence will be measure by the liner foot, complete in place, parallel to the finished grade from center to center of end posts.

4.02 PAYMENT

A. Modify existing chain link fence will be paid for at the contract unit price from Payment Item No. 0271.008 Modify Existing Chain Link Fence and Gate.

B. Pipe top rail and bottom rail fence will be paid for at the contract unit price from payment item No. 0271.148 48" Chain Link Fence Pipe Top Rail

4.03 PAYMENT ITEMS

Item No.	Description	Unit
0271.008	MODIFY EXISTING CHAIN LINK FENCE AND GATES	LF
0271.148	48" CHAIN LINK FENCE PIPE TOP RAIL	LF

END OF SECTION

SECTION 02509

SUBBASE AND BASE COURSES

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section specifies furnishing and placing gravel borrow and dense-graded crushed stone for subbase and base courses in accordance with the Standard Specifications Construction Section 02509, except as modified herein.

B. Related Work: Related requirements are included in, but not limited to, the following Sections.

1. Section 02100: SITE PREPARATION
2. Section 02200: EARTHWORK
3. Section 02513: BITUMINOUS CONCRETE PAVEMENT.
4. Section 02515: ASPHALT BLOCK
5. Section 02525: GRANITE CURBING AND EDGING
6. Section 09360: MODULAR TACTILEW SURFACES

PART 2 - PRODUCTS

2.01 GRAVEL SUBBASE

A. Gravel subbase materials shall conform to EARTHWORK, Section 02200, Gravel Borrow.

B. Gravel base course material shall conform to EARTHWORK, Section 02200, Gravel Borrow.

PART 4 - MEASUREMENT AND PAYMENT

4.01 GENERAL

A. No separate measurement or payment will be made for work required under this Section.

END OF SECTION

SECTION 02513

BITUMINOUS CONCRETE PAVEMENT

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section specifies the construction of bituminous concrete pavement on prepared subgrade or aggregate subbase or base course, and on existing pavement to the lines, grades, compacted thickness, and cross sections indicated in accordance with Standard Specifications Construction Section 02513, except as modified herein.

B. This Section specifies bituminous concrete cold planing shown on the Drawings.

C. This Section also specifies the furnishing and installing of bituminous concrete as infill at edge of platform, and as infill strip at rubber pedestrian track crossing.

D. Other work includes bituminous base placed under brick, and bituminous setting base and neoprene modified asphalt tack coat placed under asphalt block pavers.

E. This Section also specifies the requirements for bituminous concrete pavement for roadway overlays, temporary platforms, permanent platforms, roadway, sidewalks, trench patching and track crossings as shown on the drawings.

F. Related Work: Related requirements are included in, but not limited to, the following Sections:

1. Section 02100: SITE PREPARATION
2. Section 02200: EARTHWORK
3. Section 02509: SUBBASE AND BASE COURSE
4. Section 02901: RUBBER RAIL SEAL
5. Section 09360: MODULAR TACTILE SURFACES

1.03 SUBMITTALS

A. Submit in accordance with SUBMITTALS, Section 01300.

B. Submit mix designs for binder course, dense mix and hot mix asphalt.

C. Submit shop drawings and product data for asphalt and flangeway grade crossings.

D. The Contractor shall submit to the Engineer for approval a description of equipment and the process to be used for cold planing existing pavement

1.04 REFERENCES

A. The Commonwealth of Massachusetts Highway Department, Standard Specifications for Highways and Bridges. (MHD Standard Specifications)

PART 2 - PRODUCTS

2.02 BITUMINOUS CONCRETE PAVEMENT MIXES

A. Infill at rubber pedestrian track crossings and at edge of platform to rail shall be dense mix.

B. Bituminous concrete at temporary walkways, permanent sidewalks, permanent platforms shall be binder course and dense mix top course.

C. Binder course shall conform to MHD Standard Specifications, Materials Specifications M3.11.00, and M3.11.03, Table A, Binder Course. Surface (top) Course shall conform to MHD Standard Specifications M3:11:03, Table A, Top Course. Base course shall conform to MHD Standard Specifications M3.11.03 Table A, Base Course.

D. Dense mix for bituminous concrete curbs and sidewalks shall conform to MHD Standard Specifications M3.11.00, and M3.11.03, Table A, Dense Mix, unless otherwise specified or shown on the Drawings.

E. Bituminous Setting Base for Asphalt Block Paving at platforms shall be as follows:

1. Asphalt cement to be used in the bituminous setting bed shall conform to ASTM D946-82 with a penetration at 77 Deg. F., 100 G, 5 Sec. of minimum 85 mm and maximum 100 mm.

2. The fine aggregate to be used in bituminous setting bed shall be clean, hard sand with durable particles and free from adherent coatings, lumps of clay, alkali salts, and organic matter. It shall be uniformly graded from "coarse" to "fine" and all passing the #4 sieve and meet the gradation requirement when tested in accordance with the standard method of test for sieve or screen analysis of fine and course aggregates ASTM C136, latest edition.

3. The dried aggregate shall be combined with hot asphalt cement, and the mix shall be heated to approximately 300 Deg. F. at an asphalt plant. The approximate proportion of materials shall be seven percent (7%) cement asphalt and ninety-three percent (93%) fine aggregate. Each ton shall be apportioned by weight in the approximate ratio of 145 lbs. to 1855 lbs. sand. The Contractor shall determine the exact proportions to produce the best possible mixture for construction of the bituminous setting bed to meet construction requirements.

4. Setting bed shall be done in one course with a minimum finished depth of three-quarters inch (3/4").

2.04 NEOPRENE MODIFIED ASPHALT TACK COAT

A. Neoprene tack coat for use beneath pavers on bituminous setting bed shall be neoprene modified asphalt adhesive consisting of two percent (2%) neoprene base with ten percent (10%) structural fibers and eighty eight percent (88%) asphalt. Melting point shall be 150° F. (min,) in

accordance with ASTM D36. Penetration at 77° F., 100 gram load for 5 seconds (.1 mm.) shall be 23 to 27.

PART 3 - EXECUTION

3.04 PRIME COAT

B. Clean the existing surface of all foreign matter and loose material before applying prime coat. Apply the prime coat by mechanical means at the rate indicated or directed.

1. The rate of application of the prime coat shall be 0.05 gallon per square yard.

3.11 NEOPRENE MODIFIED ASPHALT TACK COAT

A. A coating of 2 percent (2%) neoprene-modified asphalt adhesive shall be applied by mopping, squeegeeing or toweling over the top surface for the bituminous setting bed so as to provide a bond under the pavers. If it is troweled, the trowel shall be serrated with serration not to exceed one-sixteenth inch.

3.12 BITUMINOUS CONCRETE INFILL AT EDGE OF PLATFORM TO RAIL

A. Install bituminous concrete infill between platform edge beam and rail and between rubber grade crossing panels as indicated on the Drawings.

3.13 TEMPORARY PLATFORM

A. Temporary bituminous concrete platforms and associated items shall be constructed as indicated on the Drawings and as directed. The Contractor shall regrade and compact the existing ground to create a smooth subgrade to receive bituminous concrete. Excavate and backfill as required. Fill with gravel borrow as necessary at soft spots. The Contractor shall remove and dispose of the temporary platform and restore the ground to pre-construction conditions at the completion of the Project.

3.14 COLD PLANING

A. The cold planing operation shall be controlled in such a manner that the resultant material will be free from excessive fine material. The Engineer will determine the acceptable level of fine material. The bituminous pavement shall be planed to depths shown on the plans. The material shall be transported to the bituminous concrete batch plant and not stored on site.

PART 4 - MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

A. Bituminous concrete infill at rubber grade crossings will be measured by the ton installed, complete in place.

B. Bituminous concrete infill at the edge of platform to rail will not be measured separately, and the cost shall be considered incidental to Payment Item No. 0932.300, as specified in MODULAR TACTILE SURFACES, Section 09360.

C. Bituminous concrete pavement for temporary platforms and temporary grade crossings will be included in Item 0220.098, SITE PREPARATION.

D. Bituminous concrete pavement for patching, overlay, and miscellaneous paving will be measured by the ton installed including leveling, rolling and all incidentals.

E. Bituminous concrete excavation by cold planing will be measured by the square yard.

F. No separate measurement will be made for removal and disposal of excavated bituminous concrete associated with trenching, curb removal or platform demolition.

G. Separate measurement or payment will not be made for bituminous concrete setting base and neoprene asphalt tack coat for asphalt block paving installations complete in place. All costs in connection therewith will be included in Item No. 0451.020, as specified in ASPHALT BLOCK AND GRANITE UNIT PAVEMENT, Section 02515.

H. Bituminous concrete pavement for permanent sidewalks and platforms will be measured by the Ton installed including leveling, rolling and all incidentals.

4.02 PAYMENT

A. Bituminous concrete infill will be paid for at the Contract Unit Price for Class I DENSE BITUMINOUS CONCRETE, PROTECTIVE COURSE, Payment Item No. 0261.202.

B. Bituminous concrete pavement will be paid for at the Contract Unit Price for BITUMINOUS CONCRETE PAVEMENT, Payment Item No. 0261.151.

C. Cold planing will be paid for at the Contract Unit Price for Bituminous Concrete Excavation by Cold Plane, Payment Item No. 0261.126.

4.03 PAYMENT ITEMS

Item No.	Description	Unit
0261.126	BITUMINOUS CONCRETE EXCAVATION BY COLD PLANE	SQUARE YARD
0261.151	BITUMINOUS CONCRETE PAVEMENT	TON
0261.202	CLASS I DENSE BITUMINOUS CONCRETE, PROTECTIVE COURSE	TON

END OF SECTION

SECTION 02515

ASPHALT BLOCK

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section specifies furnishing and installing asphalt block paving.

B. Related Work: Related requirements are included in, but not limited to, the following Sections.

1. Section 02200: EARTHWORK

2. Section 02513: BITUMINOUS CONCRETE PAVEMENT

3. Section 03300: CAST-IN-PLACE CONCRETE

1.02 QUALITY CONTROL

A. Design Criteria. Provide clean and durable paving work free of cracked, or discolored joints and cracked or loose pavers.

B. Mock-up

1. General

a. Schedule field sample construction so that field samples can be accepted by the Engineer a minimum of 30 days prior to installation of paving surfaces represented by field samples.

b. Locate mock-up panel in area as directed by the Engineer.

c. Continue to construct field samples until acceptable panel is produced. Unaccepted samples shall be removed from the site.

d. Use same setting bed and joint mixes, used in acceptable mock-ups, produced. Acceptable mock-up shall be standards in final work unless otherwise directed by the Engineer.

e. Accepted sample shall be protected from damage and remain undisturbed and shall be maintained for the duration of construction, becoming the standard for acceptance of all proposed asphalt block paving. Samples shall show all aspects of finish paving appearance including surface texture, color, jointing, edge treatment, sealing and cleanliness.

f. Provide field samples simulating actual design and execution conditions for paving materials, mixing of paving materials, installation sequence, curing, use of temporary protective coating system, and methods for correction of defective work.

g. Asphalt block pavers on bituminous setting bed and concrete base, sample panel: Construct one 5 foot x 5 foot sample of pavers on concrete base with bituminous setting bed, neoprene tack coat, and stone dust swept joints. All edges of sample panel to be retained with timber forms.

h. Remove mock-ups from site at completion of project unless otherwise directed by the Engineer.

1.03 SUBMITTALS

A. Submit the following for approval in compliance with SUBMITTALS, Section 01300, and with the additional requirements as specified.

B. At least thirty (30) days prior to intended use, the Contractor shall provide the samples, manufacturer's specification sheets, and submittals required by Specification. Contractor shall not order materials until Engineer's review and approval of samples, certification, and test results. Delivered materials shall closely match the approved samples.

1. Manufacturer's Literature. Provide manufacturer's literature describing products.

2. Certificates

a. Provide a certified test report of stone dust sieve analysis.

C. Samples

1. Asphalt block pavers: Submit ten (10) pavers of representative pavers to show full range of color variation that can be expected in the finished work.

2. Stone Dust: Submit one twenty (20) lb. Sample.

D. Installation Instructions. Provide manufacturer's recommended instructions, including installation materials and methods.

E. Maintenance Data. Provide recommended maintenance instructions including materials and methods recommended for maintenance of paver installed.

F. Maintenance Materials. Prior to final acceptance, furnish the Authority with two percent of each different type or color of paving material surface installed.

1.04 DELIVERY, STORAGE AND HANDLING

A. Deliver materials clearly marked with legible and intact labels, identifying brand names and contents of containers.

B. All block paving units shall be packaged by strapping to manufacturer's standard and delivered on pallets. Pavers damaged in any manner will be rejected and shall be replaced with new material at no additional cost to the Authority.

C. Store all paving units blocks on raised platforms. Storage piles or stacks shall be located to avoid or be protected from traffic. Materials shall be stored under an approved roof or covered with waterproof tarpaulins, at all times, except when men are working and using the materials.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Asphalt Block Pavers: The selection of Asphalt Block pavers must be from commonly

available stock to assure future availability for maintenance purposes. Asphalt block pavers shall contain clean, hard, unweathered stone, which shall be crushed in such a manner that the particles shall be as nearly cubical as possible and varying size up to 3/8 inch. The inorganic dust or filler contained in the block shall be produced from sound limestone or other approved material. The asphalt cement produced from sound limestone or other approved material. The asphalt cement shall conform to Type 3 Asphalt ASTM Designation D-312 with a penetration at 77 degrees F, 100G, 5 sec. of minimum 15 mm and maximum of 33 mm.

1. The 6" x 12" x 3" asphalt block pavers shall be black in color and approved by the Engineer with a light sandblast finish on all exposed surfaces. Aesthetics are an important consideration and pavers may be rejected on the basis of color or finish alone. The blocks shall have a permissible plus or minus tolerance of 1/16 inch in any direction.

2. Asphalt Block Pavers shall be as manufactured by:

   a. Hastings Pavement Co., Inc., Freeport, New York;
   b. Hanover Architectural Products, Hanover, PA;
   c. Pavestone Company, Grapevine, Texas
   d. or approved equal.

B. Joint Filler: Stone dust shall be inert materials that are hard, durable stone free from surface coatings and deleterious materials. Submit samples for Engineer's approval. Sand shall conform to the grading requirements of ASTM C144 as follows:

Sieve Square Openings	Percent Passing by Weight
No. 4	100
No. 8	95 - 100
No. 16	60 - 75
No. 30	35 - 50
No. 50	25 - 35
No. 100	15 - 20
No. 200	0 - 10

C. Cement shall be Portland cement Type 1, per ASTM C150.

D. Gravel Borrow Subbase shall be as specified in EARTHWORK, Section 02200 of the Specifications.

E. Concrete Base shall be cast-in-place concrete as specified in CAST-IN-PLACE CONCRETE, Section 03300.

F. Bituminous Setting Bed:

1. Bituminous concrete setting bed shall be as specified in BITUMINOUS CONCRETE PAVEMENT, Section 02513.

2. Neoprene tack coat for use beneath pavers shall be as specified in BITUMINOUS

CONCRETE PAVEMENT, Section 02513.

G. Expansion Joint Material: as specified in SEALANTS AND CAULKINGS, Section 07920, except as modified below:

1. Preformed Joint Filler: Joint filler shall be of closed cell polyethylene foam in conformance to AASHTO M153-65, Type I, Federal Specification HH-F-341F, Type II, Class A and ASTM D1752-67, Type I.

2. Joint Sealant: Shall be a self-leveling, brush grade, polyurethane-based, one component, elastomeric sealant, sight gray in color, complying with Federal Specification TT-S-00230C, Class A, Type I.

PART 3 - EXECUTION

3.01 INSPECTION

A. General: Examine work-in-place, upon which work specified in this Section is dependent, for defects which may influence application or installation and performance of work specified in this Section. Do not start installation unit unsatisfactory conditions have been corrected and the Engineer has accepted finish grade of pavement base.

B. Examine surfaces to receive pavers and verify following where applicable:

1. All surfaces are dry, clean, and free of oily or wax films.

2. Concrete surfaces to receive pavers have proper finishes.

3. All anchors, electrical, and communications work in or below pavers have been installed prior to installation of pavers.

3.02 PREPARATION

A. Perform all cleaning necessary to bituminous concrete or cement base to provide a clean base surface, free from oil, grease, other impurities, or loose or friable particles.

B. Paver Lay-out

1. Lay-out pavers in accordance with the Drawings.

2. Center fields and patterns on areas so that no paver is less than half size.

3. Locate precisely expansion joints and accessories before pavers are installed.

3.03 INSTALLATION

A. General Requirements

1. No pavers shall be laid in inclement weather or when the temperature is 36° F., and dropping, nor shall any work be done on rising temperatures until the temperature reaches 32° F. Frozen materials shall not be used.

2. Do not exceed 1/32-inch unit-to-unit offset from flush (lippage) nor1/8" in 24 inches and

1/4" in 10 feet from level or indicated slope for furnished surface of paving. All areas of finished paving on which water stands or which are found excessively uneven shall be promptly brought to the correct line and grade.

3. Perform any repair or patching to pavements outside the project site damaged by work of the Contract. All patching work required shall be in accordance with requirements for new construction.

4. No vehicular traffic of any kind shall be allowed to pass over the newly finished surface until it has had time to set. Twenty-four (24) hours will be considered sufficient time for the pavement to set in most cases, but this period may be extended by the Engineer as required by weather or other reasons.

5. The pavers shall be carefully placed by hand in straight courses as shown on the Drawings with even hand tight joints and uniform top surface. Joint tolerance shall be hand tight to one-eighth inch (1/8"). Accurate alignment shall be maintained, and the pattern shall be that shown on the Drawings. The Engineer will approve the start of paving layouts.

6. Pavers shall be brought to the finish grade as shown on the Drawings. There shall be no deviation from a true grade greater than one-quarter inch in 10 feet. All finish paved areas shall slope to drain at a minimum of one-eighth inch per foot, or as shown on Drawings.

7. All cutting and patching required to complete the work shall be done (including the filling and closing of all openings) with water cooled radial cut-off type masonry saws for a sharp, straight edge.

8. Newly laid pavers shall be protected at all times by panels of plywood. These panels may be advanced as work progresses; however, the plywood protection shall be kept in areas which will be subjected to continued movement of materials and equipment. All necessary precautions shall be taken in order to avoid depressions and protect paver alignment.

B. Joint Construction

1. Sweep dry 6:1 stone dust/cement mix into paver joints until joints are filled solid. Mist lightly with water and repeat sweeping and misting a minimum of three (3) times or until joints are compacted and full.

3.04 ADJUSTING AND CLEANING

A. Prior to acceptance, the asphalt block paved area shall be flooded with water to assure that there are no depressions. Remove and reset pavers as required until surface is true to line and grade. Refill sand joints as necessary until all joints are filled to finish grade.

B. Completion: The completed paving stone surface shall be swept clean and washed down with water to provide a finished workmanlike installation. Any stains that occur during construction must be removed by steam cleaning the entire area if necessary. Any areas which are not freely draining or where puddling occurs shall be removed and replaced as per Drawings at no expense to the Authority.

C. Guarantee: Contractor shall guarantee asphalt paver installation for one year. Contractor shall return one year after final acceptance of work and shall repair, at no cost to the Authority, any asphalt paver areas which have settled or in any way changed from the designed grades and patterns as shown on the Drawings as determined by the Authority.

PART 4 - MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

A. Asphalt block paving will be measured by the square foot installed complete-in-place including concrete base slab, bituminous concrete setting bed, neoprene tack coat, gravel borrow, excavation, grading, and compaction, including all labor, equipment, materials, tools, incidental work, and construction methods.

4.02 PAYMENT

A. Payment for Asphalt Block Paving will be made at the Contract Unit Price for ASPHALT BLOCK PAVING, Payment Item No. 0451.020.

4.03 PAYMENT ITEMS

Item No.	Description	Unit
0451.020	ASPHALT BLOCK PAVING	SQUARE FOOT

END OF SECTION

SECTION 02525

GRANITE CURBING AND EDGING

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section specifies furnishing and installing new straight and curved granite curb, and removing, cleaning and resetting curb or removing and stacking curb or removing and discarding curb, sawcutting pavement at the curb including material excavation, borrow, backfill, mortar and incidentals required for the complete installation of the work as indicated on the Drawings and as specified.

B. Related Works: Related requirements are included in, but not limited to the following Sections:

1. Section 02100: SITE PREPARATION
2. Section 02200: EARTHWORK
3. Section 02513: BITUMINOUS CONCRETE PAVEMENT
4. Section 03300: CAST-IN-PLACE CONCRETE

1.02 REFERENCES

A. The Commonwealth of Massachusetts, Massachusetts Highway Department, Standard Specifications for Highways and Bridges. (MHD Standard Specifications)

1.03 SUBMITTALS

A. Submit in accordance with SUBMITTALS, Section 01300.

B. Product Data/Catalog Cuts

1. Granite Curb
2. Flush Granite Curb and Granite Transition Curb
3. Cement Mortar

1.04 DELIVERY, HANDLING, TRANSPORTATION, STORAGE, AND PROTECTION

A. Delivery, handling, transportation, storage and protection shall be in accordance with MATERIALS AND EQUIPMENT, Section 01600, except as modified herein.

B. The Contractor shall store and protect all curb and edging, and keep it in satisfactory condition until the work is completed. The Contractor shall replace any existing curb that is to be reset, which is lost or damaged as a result of his operations, or because of his failure to store and protect it in a manner that would eliminate its loss or damage.

PART 2 - PRODUCTS

2.01 MATERIALS

B. Concrete bedding shall conform to CAST-IN-PLACE CONCRETE, Section 03300, Class 4000 - 3/4.

B. Gravel Borrow shall be as specified in EARTHWORK, Section 02200.

C. Granite Edging and Curb

1. Granite edge, flush granite edge, transition edge and granite curb shall conform to MHD Standard Specifications, Material Specifications M9.04.0, M9.04.1, M9.04.5, and M9.04.6 and modified as shown on the Drawings.

   a. Flush granite curb shall be Type VA-4.
   b. Granite curb and edge shall be light grey granite as approved by the Engineer.
   c. The ends of all curved stones shall be cut on radial lines.
   d. Curb, curb inlets and curb corners removed and reset shall consist of so much of the same as is suitable, in the Engineer's judgment to be reset, stacked or discarded.

2. Cement mortar shall conform to MHD Standard Specifications, Material Specifications M4.02.15.

PART 3 - EXECUTION

3.01 REMOVING, RESETTING, STACKING AND DISCARDING EXISTING CURB

A. The trench of sufficient width and depth shall be excavated to remove the present curb, curb corners or curb without damage.

B. The Contractor shall protect all curb and keep it in satisfactory condition until acceptance of the Contract. The Contractor shall replace any existing curb, edging, curb corners and curb inlets that is to be reset, which is lost or damaged as a result of this operation.

C. The length of any section of curb shall be cut in order to fit closures as necessary. The ends of all stones shall be square with the planes of the top and face.

D. The existing curb shall be cleaned after removal. The exposed face and top of the curb shall be sandblasted to remove dirt and bituminous concrete. The curb shall be cleaned to produce a uniform color and appearance to match the new curb to be installed under the contract.

E. The Contractor shall remove, handle, and stack curb unusable for relaying at a location convenient for removal by the Owner. The Contractor is also responsible for protection and storage of the curbing.

F. No curbing shall be reset until it is inspected by the Engineer and found to be in satisfactory condition and of adequate dimensions. The Contractor will be responsible for removal and disposal of curb deemed as unsatisfactory for relaying or stacking without additional compensation.

3.02 SETTING CURBING AND EDGING

A. Curbing and edging shall be set with concrete foundation as indicated on the Drawings. All spaces under and around the granite shall be filled with gravel, thoroughly compacted by tamping so that the granite shall be supported throughout the entire length. The curbing shall be set at the line and grade required and shall project above the pavement grade such distance as is shown on the Drawings or required.

1. Tolerances: Place granite curbing and edging within 1/4 inch of the indicated elevations or dimensions, and deviating not more than 1/8 inch from a 10 foot straightedge placed anywhere on the surface.

B. The curbing shall be fitted together as closely as possible and grouted.

1. The joints between curbstones, both front and back, shall be filled with cement mortar and pointed on the top and front exposed portions.

2. After pointing, the curbstones shall be cleaned of all excess mortar.

C. After the curbing is set, the spaces between it and the walls of the excavation shall be filled with concrete where indicated on the Drawings and gravel borrow, tamped and compacted to the required depth without affecting the line and grade of the curbing.

D. The new and existing curbing or edging shall be segregated and set to give a uniform appearance.

E. The length of any section of curb or edging may be altered by cutting in order to fit closures as necessary and as approved by the Engineer

PART 4 - MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

A. New granite curb will be measured by the linear foot complete in place. Including gravel borrow, excavation, sawcutting pavement, grading and compaction, bituminous concrete patching, including all labor, equipment, materials, tools and incidentals.

B. Curbing removed and reset will be measured by the linear foot complete in place. Including gravel borrow, excavation, sawcutting pavement, grading and compaction, bituminous concrete patching, including labor, equipment materials, tools and incidentals.

C. No separate measurement will be made for cleaning and sandblasting removed curb to be reset.

D. No separate measurement will be made for curb removed and discarded.

E. No separate measurement will be made for curb removed and stacked.

4.02 PAYMENT

A. Payment for New Granite Curb will be made at the Contract Unit Price for Payment Item No. 0262.105, New Granite Curb.

B. Payment for Curbing Removed and Reset will be made at the Contract Unit Price for Payment Item No. 0262.701, Curbing Removed and Reset.

4.03 PAYMENT ITEMS

Item No.	Description	Unit
0262.105	NEW GRANITE CURB	LF
0262.701	CURBING REMOVED AND RESET	LF

END OF SECTION

SECTION 02577

PAVEMENT MARKING

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section specifies the furnishing and applications of pavement markings as shown on the Drawings and in accordance with Standard Specifications Construction Section 02577, except as modified herein.

B. All work shall be in accordance with the Boston Transportation Department (BTD), Massachusetts Highway Department (MHD) and Manual on Uniform Traffic Control Devices (MUTCD).

1.03 REFERENCES

A. The Commonwealth of Massachusetts Highway Department, Standard Specifications for Highways and Bridges, 1988 Edition (MHD Standard Specification).

PART 2 - PRODUCTS

2.01 MATERIALS:

A. Traffic Paints: Shall conform to MHD Standard Specifications Section M7.00.0 and M7.01.05 or M7.01.06.

B. Colors: Shall be as indicated unless otherwise directed by the Engineer.

PART 4 - MEASUREMENT AND PAYMENT

4.01 GENERAL

A. Separate measurement and payment will not be made for the work of this Section, complete in place, but all costs in connection therewith shall be included in the Contract Lump Sum Price for PAVEMENT MARKINGS, Payment Item No. 1040.900.

4.02 PAYMENT ITEMS

Item No.	Description	Unit
1040.901	PAVEMENT MARKINGS	Linear Foot

END OF SECTION

SECTION 02650

EXISTING SITE UTILITIES

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section specifies the maintenance, support, protection, relocation, reconstruction and adjustment-to-grade, restoration, and abandonment of existing utilities affected by the construction work in accordance with Standard Specifications Construction Section 02650, except as modified herein.

C. This Section also specifies modifications to existing utilities and utility structures.

D. This Section specifies allowances for the services of the telephone and electrical companies.

E. Perform the following items of work to complete the work of this Section, as shown on the Drawings, and as specified.

1. Furnish materials and equipment required to complete the utility relocation, adjustment and modification work and other work as required.

   a. The items to be relocated, adjusted and modified include, but are not limited to, catch basins, manholes, drain manholes, electrical manholes and vaults, electrical handholes, communication handholes, switch boxes and water gates.

2. Provide for the coordination with individual utility companies for location verification of existing utilities and for utility relocation, adjustment and modification work required to be completed by the utility companies.

F. In case of conflict between the Contract Documents and the utility company's standards for products and execution, the utility company's standards shall govern.

G. Related Works: Related requirements are included in, but not limited to, the following Sections:

1. Section 02100: SITE PREPARATIONS

2. Section 02200: EARTHWORK

3. Section 02400: DRAINAGE AND SEWER SYSTEMS

4. Section 02513: BITUMINOUS CONCRETE PAVEMENT

5. Section 03300: CAST-IN-PLACE CONCRETE

6. Section 16050: BASIC MATERIALS AND METHODS FOR ELECTRICAL WORK.

1.02 SUBMITTALS

F. Submit sketches drawn to scale of test pits taken to locate utilities. Include a key plan

indicating the location of the test pits in relationship to the site and adjacent streets. Include marked up copies of the utility plans indicating any deviation from the locations indicated and any conflicts with the work.

G. Submit to the Engineer and to the respective utility companies shop drawings, catalog cuts, and product information on materials to be used on their respective utility systems.

H. Submit copies of utility company notifications to the Engineer.

1.03 NOTIFICATION

A. The Contractor shall give written notification to the utility companies.

1. The written notification shall be registered.

a. Registered will be defined as by registered mail, return receipt requested by the US Postal Service, or by the services of a courier service that provides a signed receipt indicating that the addressee has received the correspondence.

2. Submit a copy of each written notification, and a copy of the corresponding signed receipt to the Engineer.

B. Initial Notification

1. The Contractor shall open work orders, with the individual utility owners, within 90 days after the Notice to Proceed in order to allow for the ordering of long lead items. Provide each utility company with the proposed schedule of work on its respective facilities.

2. Prior to the start of excavation work, the Contractor shall contact Dig-Safe (1-800-322-4844) and all utility companies owning underground lines and facilities in areas to be excavated in order to obtain details of the location and extent of the lines and facilities prior to commencing excavation. Contact with the utility companies shall be made sufficiently in advance so that the utilities can locate their equipment/facilities.

C. Periodic Notifications Prior To Specific Items of Work

1. For work to be performed by the utility company's forces or by the Contractor's utility company approved subcontractor, the Contractor shall give notice to the affected utility owner at least three (3) weeks in advance of the start of the work, or longer when necessary for the scheduling of the work.

2. For work to be performed by the Contractor, notice shall be given to the affected utility owner at least seven (7) calendar days prior to the start of the work to facilitate scheduling and inspection by the utility company. When work is to be performed between 4 PM and 7 AM, or on weekends, provide at least 14 calendar days notice.

3. The Contractor shall call Dig-Safe (1-888 344-7233) 72 hours prior to excavating near utilities.

4. When the work on a utility does not involve relocation, reconstruction, or modifications but is limited to excavating next to or below a utility line or supporting a utility in place,

provide at least three (3) working days notice to the utility owner.

5. Notify the Engineer prior to special items of work in a manner similar to utility owner notification. Submit copies of utility owner notification to the Engineer.

1.04 COORDINATION OF UTILITY WORK

A. The Contractor shall be responsible for the coordination of the activities of the utility company's crews, utility company's contractors, and the Contractor's own forces and subcontractors performing utility work. This coordination shall include, but not be limited to, the following.

1. Scheduling the utility work of all forces within the limited areas available and within the limited hours permitted by the Authority.

2. Coordinating the utility work to ensure the vertical and horizontal control of all lines installed. The utility relocation work indicated involves crossings with minimal clearances between lines. While some of these lines are to be installed by the Contractor or his subcontractors, others are to be installed by the utility companies or their contractors. The Contractor shall be responsible for the coordination of the installation of these lines to ensure that each line installed provides clearances to permit the installation of all other lines indicated or specified.

3. Maintaining utility services to Authority facilities and adjacent properties in the project area. The Contractor shall be responsible for maintaining utility service, except during designated shutdown periods. The Contractor shall be responsible for arranging shutdown periods related to utility work regardless of the utility owner. The Contractor shall be responsible for notifications to Authority departments and to abuttors impacted by shutdowns.

1.05 MAINTENANCE OF UTILITY SERVICES

A. Maintain utility service to MBTA facilities and to adjacent properties at all times.

B. Utility service shall not be interrupted without the consent from the respective utility company.

1.06 TRAFFIC MANAGEMENT

A. The Contractor shall be responsible for all aspects of traffic management related to maintenance, support, adjustment, and relocation of utility systems regardless of utility owner and regardless of whether the actual work is being performed by the Contractor, by a subcontractor to the Contractor, by the utility company's forces, or by a contractor working for the utility owner.

B. The Contractor shall be responsible for coordinating the schedule of the work of this Section with the requirements of TRAFFIC REGULATION, Section 01570.

C. Maintain vehicular and pedestrian traffic in accordance with TRAFFIC REGULATION, Section 01570. Establish and maintain detours and lane closures in accordance with Section 01570.

PART 2 - PRODUCTS

2.01 GENERAL

A. Products and materials shall be as specified in these specifications.

B. Products and materials for the work as required for the telephone companies shall conform to the specifications of the respective utility owner.

C. Products and materials for drainage and sewer systems shall conform to DRAINAGE AND SEWER SYSTEMS, Section 02400, unless otherwise specified.

2.02 BRICK

A. Brick used for the adjustment of frames and covers, and frames and grates shall conform to ASTM C 32, Grade MS.

2.04 CONCRETE BLOCK

A. Concrete blocks for manholes shall conform to ASTM C 139. Blocks shall be at least five inches but not more than eight inches in thickness, nor less than eight inches in length. The concrete blocks shall be of such shape that the joints can be effectively sealed and bonded with cement mortar.

2.05 CEMENT MORTAR

A. Cement mortar for modification work shall conform to ASTM C 270, Type M. Use ASTM C 150, Type IIA, cement.

B. Concrete for modification work shall conform to CAST-IN-PLACE CONCRETE, Section 03300.

2.06 BITUMINOUS CONCRETE PATCHING

B. Materials shall conform to BITUMINOUS CONCRETE PAVEMENT, Section 02513.

PART 3 - EXECUTION

3.01 GENERAL

C. Abandoned Facilities

3. When abandoned utilities are to be left in place, plug or cap the ends of conduits and pipes. Remove abandoned utility materials, catch basins, junction boxes, and similar structures to a minimum depth of three feet below the grade, and fill the remaining void with sand or gravel borrow as specified in Section 02200, after the plugging and capping of conduits and pipes has been complete. Puncture or break the bottom slab of manholes, catch basins and similar structure to provide drainage. Backfill and compact excavations resulting from removal of utility structures, and patch surface as required.

4. Pipes that are 18 inches in diameter or greater: Completely fill pipes in place with grout or high slump 500 psi concrete.

G. During excavation work the Contractor shall take the necessary precautions to prevent undermining or damaging of utility lines in the vicinity of the construction work. Utility lines undermined or damaged shall be repaired as directed by the affected utility owner, and the work shall be done at no additional cost to the Authority.

H. Trenches created by existing utility work shall be paved immediately. The work shall conform to and be in accordance with BITUMINOUS CONCRETE PAVEMENT, Section 02513.

I. A utility owner's field representative shall be present during modifications to existing utilities, test pits to locate utilities, support of existing utilities, and installation/construction of new pipes, conduits, and utility structures.

3.03 MODIFICATION/RECONSTRUCTION AND ADJUSTMENT-TO-GRADE

B. The Contractor shall adjust-to-grade/reset items including, but not limited to, frames that are located within the limits of the project.

C. For structures, modification/reconstruction work shall be as shown on the drawings and as directed by the Engineer. New work shall be in accordance with the utility owner's standards. The Contractor shall report to the Engineer immediately any discrepancies discovered in the field. Adjustments to the design shall be submitted to and approved by the Engineer prior to commencing the work.

D. Bricks shall be used for the adjustment of frames as required. Frames shall be set in full mortar beds.

E. Frames shall be set to the lines and grades as directed by the Engineer.

F. Adjustment-to-grade and reconstruction of drainage and utility structures shall be performed in conjunction with the platform work.

3.04 TEST PITS

A. Perform test pit work as specified in EARTHWORK, Section 02200.

B. Test pits are required to confirm the elevation and location of various utilities including, but not limited to, the following.

1. Excavate test pits to confirm the location and elevation of existing utilities at the point of interface between the existing line and new or relocated lines or structures to be installed.

2. Excavate test pits to confirm the location and elevation of existing utilities at points where new or relocated utilities cross existing lines or pass close to existing structures.

3. Excavate additional test pits as directed by the Engineer.

3.05 MAINTENANCE AND PROTECTION OF SEWERS

A. Do not permit the undermining of sewer lines during excavation work.

B. Do not allow debris, sediment, or contaminated substances to enter the sewers. The Contractor shall remove construction related sediment and debris which enter the sewers.

3.06 MAINTENANCE OF DRAINAGE

A. Maintain drainage, including catch basins, inlets, manholes, and pipes within the project area.

B. Maintain runoff to catch basins and inlets.

C. Prevent sediment and debris from entering catch basins and inlets. Use hay bales or drainage filter fabric where necessary.

D. Clean catch basin sumps and inlets as required. Clean catch basin sumps and inlets after Work completion and prior to Final Acceptance.

3.07 TELEPHONE RELOCATION

A. Existing public telephones, fire alarm boxes, emergency call boxes and telephone and communication handholes and manholes within platform work limits or as indicated are to be removed and reinstalled on the new platform. The Contractor shall contact the telephone company to obtain requirements for removal and reinstallation of the telephone units. The Contractor shall contact the local Fire Department for approval of the work on fire alarm boxes.

B. The Contractor shall also coordinate with the telephone company for all service wiring work required. The existing conduits shall be extended to the new finish grade and the work shall conform to the requirements set forth by the telephone company and/or in Section 16050.

3.08 ELECTRIC RELOCATION

A. Existing electric services within platform work limits or as indicated are to be disconnected and reconnected on the new platform. The Contractor shall contact the electric company to obtain requirements and approval for the disconnection and reconnection.

B. The Contractor shall also coordinate with the electric company for all service wiring required. The existing conduits shall be extended to the new finish grade and the work shall conform to the requirements set froth by the electric company and/or in Section 16050.

PART 4 - MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

A. Work specified in this Section for ELECTRIC COMPANY will not be measured, but will be paid for under an allowance for Item No. 0130.432. The allowance shall be adjusted to the actual amount paid for such work. The Contractor shall furnish itemized statements of the work performed and give the Engineer copies of accounts, bills, and vouchers relating thereto, and unless the Contractor furnishes such itemized statements, bills, and vouchers he shall not be entitled to payment for the related work. The allowance will be to reimburse the Contractor for

all work required.

1. An allowance amount as specified in ALLOWANCES, Section 01020 shall be included in the bid form.

B. Work specified in this Section for TELEPHONE RELOCATION will not be measured, but will be paid for under an allowance for Item 0211.488. The allowance shall be adjusted to the actual amount paid for such work. The Contractor shall furnish itemized statements of the work performed and give the Engineer copies of accounts, bills, and vouchers relating thereto, and unless the Contractor furnishes such itemized statements, bills, and vouchers he shall not be entitled to payment for the related work. The allowance will be to reimburse the Contractor for all work required.

1. An allowance amount as specified in ALLOWANCES, Section 01020 shall be included in the bid form.

C. Test pits will be measured and paid for as specified in EARTHWORK, Section 02200.

D. Utility castings adjusted to grade, including modifications to existing structures of 2 feet in grade and 2 feet in line shall not be measured separately but will be included in the Contract Lump Sum Price for Adjusting Castings within the limit of work.

E. Utilities castings to be abandoned shall be removed and stacked and shall not be measured separately but will be included in the Contract Lump Sum Price for Adjusting Castings.

F. Excavation, backfilling, concrete and masonry, and all incidental work will not be separately measured, but all costs shall be considered incidental to the item or items of work to which they pertain.

G. Concrete and masonry work for additional quantities as resulting from field modification to details shown on the Drawings or as determined and approved by the Engineer, will be measured per cubic yard, complete in place.

4.02 PAYMENT

A. Payment for the services of Electric Company for disconnection and reconnection will be based on itemized statements furnished by the Contractor to the Engineer without mark-up for overhead and profit. Payment will be made under Payment Item No. 0130.432 ELECTRIC COMPANY.

B. Payment for the services of Telephone Company, for relocation will be based on itemized statements furnished by the Contractor to the Engineer without mark-up for overhead and profit. Payment will be made under Payment Item No. 0211.488 TELEPHONE RELOCATION.

C. Payment for Utility Castings Adjusted shall be made at the Contract Lump Sum Price under Item No. 0250.116 ADJUST UTILITY CASTINGS TO GRADE.

D. Payment for Concrete Work for additional quantities as specified above will be paid for at the Contract Unit Price for Payment Item No. 0310.002 CONCRETE.

4.03 PAYMENT ITEMS

Item No.	Description	Unit
0130.432	ELECTRIC COMPANY	ALLOWANCE
0211.488	TELEPHONE RELOCATION	ALLOWANCE
0250.116	ADJUST UTILITY CASTINGS TO GRADE	LUMP SUM
0310.002	CONCRETE	CUBIC YARD

END OF SECTION

SECTION 02800

EXTERIOR CONDUIT SYSTEMS

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section specifies exterior electrical distribution, signal and communications facilities including concrete-encased underground duct banks, conduits, and associated manholes, handboxes, control cabinets, covers and appurtenances in accordance with Standard Specifications Construction Section 02800, except as modified herein.

B. Related Work: Related requirements are included in, but not limited to, the following Sections:

1. Section 02100: SITE PREPARATION
2. Section 02200: EARTHWORK
3. Section 02513: BITUMINOUS CONCRETE PAVEMENT
4. Section 03300: CAST-IN-PLACE CONCRETE
5. All Division 16 Sections.

PART 2 - PRODUCTS

2.03 CONDUIT AND FITTINGS

B. Fiberglass Epoxy: Filament wound reinforced thermosetting resin pipe conforming to ASTM D 2996.

C. Rigid Galvanized Steel Conduits conforming to ANSI C80.1

2.04 TRENCHES

A. Sand Borrow Bedding: Conform to Earthwork Section 02200.

B. Bituminous concrete patching for trenches shall conform to Section 02513.

PART 3 - EXECUTION

3.03 PLACING CONDUIT

D. Install conduits for relocated light poles within Town of Brookline in accordance with NSTAR Light Department Standards and Details.

3.04 CONSTRUCTION OF MANHOLES, HANDHOLES, AND VAULTS

C. Comply with all requirements of NSTAR Light Department for work performed within Town of Brookline.

D. Provide drainage facilities for manholes and hand boxes as required by MBTA.

PART 4 - MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

A. Separate measurement and payment will not be made for the work of this Section, but all costs in connection therewith will be considered incidental to the Contract Lump Sum Price for Site Electrical Work for the work indicated except as specified in the following.

B. Reinforced concrete encased duct will not be separately measured.

C. Conduits for signal and communication, fare collection, electrical and associated manholes, hand holes control cabinets, covers and appurtenances will not be separately measured for payment, but all costs in connection with them will be considered incidental to Payment Item No. 1600.150 Electrical Work.

D. Grounding materials will be measured for payment as specified in Section 16450.

E. Excavation and backfilling, concrete and reinforcement, bedding material, and pull lines will not be separately measured for payment, but all costs in connection therewith will be considered incidental to Payment Item No. 1600.150.

F. Bituminous concrete patching for trenches will be measured and paid for under Payment Item No. 0261.151 as specified in Section 02513.

G. Unknown obstructions and rock excavation will be measured and paid for as specified in EARTHWORK, Section 02200.

4.03 PAYMENT

A. Payment for exterior conduit systems shall be made at the contract lump sum price under Item No. 1600.150 Site Electrical Work.

4.04 PAYMENT ITEMS

Item No.	Description	Unit
1600.150	SITE ELECTRICAL WORK	LS

END OF SECTION

SECTION 02830

SITE IMPROVEMENTS

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section specifies site improvements including benches, bicycle rack, parking meter posts, trash receptacles, sand bins, tree pits with bollards, and ticket vending machine pads and incidentals as indicated on Drawings and directed by the Engineer.

B. Related Work: Related requirements are included in, but not limited to the following Sections.

1. Section 02200: EARTHWORK

2. Section 02524: CURBS, GUTTERS AND WALKS

3. Section 03300: CAST-IN-PLACE CONCRETE

4. Section 05500: MISCELLANEOUS METAL

5. Section 16050: BASIC MATERIALS AND METHODS FOR ELECTRICAL WORK

C. The Authority will furnish the following items, materials and products to the Contractor for installation under this contract.

1. Sand Bins.

1.02 SUBMITTALS

A. Submit in accordance with SUBMITTALS, Section 01300, except as modified herein.

B. Submit complete working drawings detailing operation, connections, and installation of all site improvements

C. At least thirty (30) days prior to intended use, the Contractor shall provide the following samples and submittals to the Engineer for review. Contractor shall not order materials until Engineer's review of samples, certifications or test results has been obtained. Delivered materials shall closely match the approved samples.

D. Shop Drawings: Submit Shop Drawings for the following:

1. Benches

   a. Surface Mounted Bench

2. Trash Receptacle

3. Bicycle Rack

E. Submit color samples for each item to be color finished under work of this Section together with a

breakdown of surface preparation techniques and primer and finish materials to be applied. Submit 3 inch by 6 inch sample prepared and coated as per Specification.

F. Manufacturer's product literature: Submit manufacturer's material descriptions and installation instructions for:

1. Benches

a. Surface Mounted Bench

2. Trash Receptacle

1.03 QUALITY STANDARDS

A. Metal Materials and Construction Methods:

1. Workmanship and finish shall be equal to the best practice of modern shops for each item of work. Exposed surfaces shall have smooth finish and sharp, well defined lines and arises. Sections shall be well formed to shape and size with sharp lines and angles; curved work shall be sprung evenly to curves. Castings shall have sharp corners and edges, and shall be clean, smooth, and true to pattern. Welding shall be in accordance with the Welding Code of the American Welding Society. All welding, except as otherwise indicated, shall extend the entire length of joints. All welded face joints shall be ground flush and smooth. All welds shall be water tight. Ornamental metalwork shall be cut, drilled, countersunk, and tapped as required for the attachment of other work where shown on the Drawings or when instructions for such work are given on the approved shop drawings. Ornamental metalwork to be built in with concrete or masonry shall be of the form required for anchorage, or shall be provided with suitable anchors or expansion shields.

2. Steel fabrication shall be accomplished using the highest standards of workmanship. Individual steel pieces shall be saw cut and carefully fit together. All connections shall be full welded and ground flush and smooth. All fabricated steel items shall be fine sanded throughout to produce a high standard of surface smoothness. All surfaces and connections shall be without visible grinding marks, surface differentiation or variation.

1.04 DELIVERY STORAGE AND HANDLING

A. Material shall not be delivered to the job site until shop drawings have been submitted and approved by the Engineer.

B. Material delivered to the site and material to be reused shall be fully protected against damage and loss, while stored on site.

PART 2 - PRODUCTS

2.01 GENERAL

A. All products and materials shall be equal to or of higher standards than current in-place products and materials.

B. Metal Materials Specifications:

1. Metals: Conform to Section 05500 MISCELLANEOUS METALS.

2. Cast Iron: Conform to ASTM A48 Class 35A for cast grey iron. Cast components shall have surfaces free from injurious defects and burnt-on sand, and shall be reasonably smooth, all in conformance with industry standards for "Ornamental Casting". Runners, risers, fins, and other cast-on variations from the design shall be removed by shot-blasting or grinding, except that in no case shall striations caused by grinding be visible nor shall projection be removed closer than three-thirty-second of an inch above the cast surface as drawn. Repairs made by welding to restore the thickness of surface relief of the casting will not be permitted. Casting shall be manufactured true to pattern. Component parts shall be fabricated for uniform fit.

C. Non-shrink Grout:

1. Grout for site improvement anchor bolts shall conform to the requirements of NON-SHRINK CONSTRUCTION GROUT, Section 03604. Grout shall be waterproof type not requiring sealant for exterior use. Non-shrink epoxy grout shall be Five Star Epoxy Grout as manufactured by Five Star Products, Fairfield, CT; Sika Corp., Lyndhurst, NJ; Fosroc-Preco Industries Ltd, Plainview, NJ or approved equal.

D. Sealants:

1. Application of sealants for site improvements shall be in accordance with SEALANTS AND CAULKINGS, Section 07920. Color shall match the color of the adjacent materials and as approved by the Engineer.

E. Concrete Bases, Slabs, and Foundations shall conform to Section 03300, class 3000 psi (minimum) and 3/4" aggregate.

F. Gravel Subbase shall conform to Section 02200.

G. Site Bench:

1. Site Bench shall be a steel strap bench considered and manufactured similar to the details as shown on the Drawings, or as per the direction from the Engineer.

2. Bench shall have cast iron end supports of circular form indicated on the Drawings.

3. Seat shall be contoured steel strap flatbar of 1/4" x 1-1/2" dimension, supported by 2-3/8" O.D. steel pipe or equivalent structural member.

4. Bench shall be braced by 1-1/16" o.d. steel pipe or equivalent structural member.

5. Bench shall be surface mount option, attached as shown on the Drawings with stainless steel hardware.

6. Bench castings shall be painted with a polyester powder coat, 6 mil. min thickness. Color shall be Black, Federal Color No. 17038, or as directed by the Engineer.

7. Benches shall be the products manufactured by:

a. Model C-10 by Victor Stanley Inc.
b. Tradition Series, TD-5, by FairWeather Site Furnishings
c. Model BKF, by Sitecraft
b. Or Approved Equal.

H. Trash Receptacle:

1. Trash receptacles shall be fabricated and furnished as shown on the Drawings and specified herein. All steel components including: frame, container insert and spun steel lid shall be galvanized and painted with a polyester powder coat, 6 mil. min. thickness. Color shall be black, Federal Color No.17038 or as directed by the Engineer.

2. Trash receptacles shall be the projects manufactured by:

a. Howard Products
b. Canterbury International,
c. Du Mor, Inc.
d. Or Approved Equal.

J. Sand Bin:

1. 47-3/4" x 34-3/4" x 35-1/2" high fiberglass sand bins will be provided by the Authority for installation under this Specification Section.

K. Bike Rack:

1. Bicycle racks shall be similar to the existing bicycle rack. The rack shall be u-lock compatible. The steel tubing shall be min. 1.9" OD and min. 5/8" Steel Rod. All steel components shall be galvanized and painted.

2. The bicycle rack shall be surface mounted with 2-5 inch galvanized bolts.

3. Clean and paint existing bicycle rack and reset as shown on the plans.

L. Parking Meter Posts

1. Furnish and install five (5) parking meter posts on concrete footings as required by the Town of Brookline standards.

M. Tree Pits with Bollards

1. Furnish and install four (4) steel pipe bollards in each 6'x 6' tree pit. Bollard shall be filled with concrete and painted black. The tree pit shall include forming the pit, furnishing and installing loam and furnishing and installing peastone mulch.

PART 3 - EXECUTION

3.01 GENERAL

A. All Site Furnishings shall be fabricated and installed in accordance with the Drawings. All Site

Furniture shall be installed in a level, plumb condition, true to the lines and grades shown on plans and shall conform to the current standards of the AWS. All welds shall be designated on the shop-drawings and shall be ground smooth and flush to a neat finish. All welds shall be watertight and care shall be taken to minimize distortion due to heat. Metal shall not be primed, painted or galvanized before welding.

B. The Contractor shall be responsible for timing the delivery of all items so as to minimize on-site storage time prior to installation. All stored materials and items must be protected from weather, careless handling and vandalism.

C. Contractor shall handle, pack, and ship in such a manner as to minimize damage to the finish. Touch up all areas where shop-applied finish has been damaged utilizing materials and procedures provided by product manufacturers.

D. Steel fabrication for site furnishings shall be accomplished using the highest standards of workmanship. Individual steel pieces to be welded shall be saw cut and carefully fitted together. All connections shall be full welded and ground flush and smooth. All fabricated steel items shall be fine sanded throughout prior to finishing to produce a high standard of surface smoothness. All surfaces and connections shall be without visible grinding marks, surface differentiation or variation.

E. Cast-in-place concrete base and footings for site furnishings shall be installed per Drawings and in conformance with the requirements of CAST-IN-PLACE CONCRETE, Section 03300.

F. Non-shrink grout for site furnishings anchor bolts shall be installed as shown on Drawings and in conformance with manufacturer's instructions.

G. Sealants for site furnishings shall be placed following the manufacturer's instructions and recommendations for the particular application. Place sealant from one side only to avoid trapping air. Work or flow sealant into place, filling all cavities. Shut down near-by equipment which may cause vibration. Finished sealant surface shall not be recessed and shall not allow the ponding of water.

H. Installed benches and sand bins, shall be plumb, level and shall not rock when pressure is applied.

3.02 TRASH RECEPTACLE

A. Following installation of trash receptacle onto center anchor bolt, adjust four corner legs to level and secure the receptacle. Installed receptacle shall be plumb, level and shall not rock when pressure is applied.

PART 4 - MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

A. Furnishing and installing bicycle racks, parking meter posts, tree pits and bollard, and trash receptacles complete in place including all accessories and incidental shall be measured as a lump sum for Item No. 0270.000 Site Improvements.

B. Furnishing and installing benches complete in place including all accessories shall be measured

each.

C. Installing sand bins and ticket vending machines, furnished by the Authority, including all accessories and incidentals shall be measures as a lump sum for Item No. 0270.000 Site Improvements.

D. No separate measurement or payment will be made for excavation and backfill for conduit trenches or foundations of benches, trash receptacles, sand bins and ticket vending machines, and ticket validating machines. All costs in connection therewith will be considered incidental to the items of work to which they pertain.

E. No separate measurement or payment will be made for foundations for benches, trash receptacles, sand bins, and ticket vending machines. Foundations shall include concrete, reinforcing steel, anchor bolts, grout, including all accessories and incidentals.

F. No separate measurement or payment will be made for duct banks connected to ticket vending machines. Duct banks shall include conduit, concrete, reinforcing steel, cable, power connections, all accessories and incidentals.

4.02 PAYMENT

A. Payment for Site Improvements shall be made at the contract lump sum price under Item No. 0270.000 Site Improvements.

B. Payment for Wood and Steel Benches shall be made at the contract price each under Item No. 1050.265 Wood and Steel Benches - Type B.

4.03 PAYMENT ITEMS

ITEM NO.	DESCRIPTION	UNIT
0270.000	SITE IMPROVEMENTS	LS
1050.265	WOOD AND STEEL BENCHES – TYPE B	EA

END OF SECTION

SECTION 02901

RUBBER RAIL SEAL

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section specifies the design, furnishing and installing of rubber rail seal for asphalt installation to suit the vertical and horizontal alignments at the installation locations as indicated and as directed.

1.02 RELATED WORK

A. Related requirements are included in, but not limited to, the following Sections:

1. Section 02513: BITUMINOUS CONCRETE PAVEMENT

2. Section 09360: MODULAR TACTILE SURFACES

1.03 SUBMITTALS

A. Submit in accordance with SUBMITTALS, Section 01300, except as modified herein.

1. Provide a sample of the rubber rail seal to be installed.

2. Manufacturer's installation instructions for rubber rail seal.

1.04 QUALITY ASSURANCE

A. The following Codes, Regulations, Referenced Standards and Specifications apply to work, included in this Section:

1. Codes and Standards,

a. AREA: Manual of Railway Engineering
b. MBTA: Railroad Operations; Book of Standard Plans, Track and Roadway is included, by reference in these Specifications and shall be followed and conformed with. A copy can be viewed or supplied upon request to the MBTA Design Department, 500 Arborway, Jamaica Plain, MA, 617-222-5044.

1.05 DELIVERY, HANDLING, TRANSPORTATION, STORAGE AND PROTECTION

Delivery, handling, transportation, storage, and protection shall be in accordance with MATERIALS AND EQUIPMENT, Section 01600.

PART 2 - PRODUCTS

2.01 RUBBER RAIL SEAL

A. Rubber rail seal shall be a full depth, rubber strip designed to fit against gauge and field side rails to form a barrier which controls asphalt and keeps it away from the rail. Rubber rail seal shall be 100% virgin rubber and shall be of a high resistivity to minimize stray current. Rubber rail seal shall be held in place using 9" cut spikes only. Shorter spikes will not be allowed.

B. Furnish full depth, rubber strip rail seal. The rubber rail seal shall be as manufactured by:

1. Kraiburg of America, Inc.
   Lisbon, Iowa 522

2. Hi Rail Corporation
   Chicago, Illinois 60606

3. Riedel Omni Products, Inc.
   Portland, Oregon 97208-2788

4. Pittenger & Cook Engineering, Inc.
   Mundelein, Illinois 60060

5. Polycorp Ltd.
   33 York Street
   Elora, Ontario N0B 1S0

6. PPI

7. Or approved equal.

C. The type, design and style of the rubber rail seal shall be approved by the Authority before the installation of the product.

2.02 SPECIAL TOOLS

A. Furnish to the Authority 2% of the total amount of rubber rail seal required to complete the work and furnish special tools needed to install the rubber rail seal.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Construct rubber rail seal in accordance with the requirements of AREA General Specification for Highway Grade Crossings over Railroad Tracks, except as modified herein.

B. Install rubber rail seal in accordance with the manufacturer's instructions and the approved installation procedure. Rubber rail seal must be held in place using 9" cut spikes only. Shorter spikes will not be allowed.

C. Rails shall be coated throughout the crossing length with coal tar in accordance with Section 02900.

1. Rails shall be entirely coated, excluding top and gauge face.

PART 4 - MEASUREMENT AND PAYMENT

4.01 GENERAL

A. Separate measurement and payment will not be made for the work of this Section, complete in place, but all costs in connection therewith shall be considered incidental to the item or items of work to which they pertain.

END OF SECTION

SECTION 02950

PLANTING

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section specifies planting including but not limited to the following: all labor, materials, equipment, appliances, and services necessary to provide all site planting within the Contract Limit Lines, as required by the Drawings and as specified herein.

B. The following list of items is to be used as a guide and shall not be considered limiting the scope of the work.

1. Planting Mix

2. Mulch

3. Clean-up

C. Related work under other sections:

1. Section 02100: SITE PREPARATION

2. Section 02830: SITE IMPROVEMENTS

1.02 SUBMITTALS

A. Submit in accordance with SUBMITTALS, Section 01300, except as modified herein.

B. The following samples shall be submitted:

1. Mulch - Shredded softwood pine bark

1.03 QUALITY CONTROL

A. "STANDARDIZED PLANT NAMES," 1942 Edition, American Joint Committee on Horticultural Nomenclature.

B. "AMERICAN STANDARD FOR NURSERY STOCK," latest edition, American Association of Nurserymen (ANSI 260.1).

C. Massachusetts Standard Specifications - Latest edition of the Standard Specifications for Highways, Bridges and Waterways, The Commonwealth of Massachusetts, Department of Public Works, 1989 Edition.

D. ANSI 133.1 Safety Requirements for Pruning, Trimming, Repairing, Maintaining and Removing Trees.

E. National Arborist Association - Pruning Standards for Shade Trees, Revised 1988.

F. Testing

1. Provide samples for testing as required by the Engineer.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Loam Borrow

1. Loam Borrow shall be a screened loam borrow provided by the Contractor. It shall be a fertile, friable, processed screened loam capable of sustaining vigorous plant growth. It shall be free of any admixture of subsoil, stones larger than three-quarter inch (3/4"), clods of hard earth, plant roots, sticks or other extraneous materials.

2. Loam shall conform to the following grain size distribution for material passing the No. 4 sieve:

U.S. Sieve No.	Percent Passing By Weight	
	Maximum	Minimum
4	--	100
10	100	80
20	95	65
40	80	45
100	40	28
200	25	15
0.002mm	3	0

3. Maximum size shall be three- quarter- inch (3/4") largest dimension. The maximum retained on the No. 4 sieve shall be 10 percent (10%) by weight of the total sample. Tests shall be combined hydrometer and wet sieving in compliance with ASTM D422 after destruction or organic matter by ignition.

4. The organic content shall be between 3.5 and 6.0 percent by weight as determined by loss on ignition of test samples oven-dried to a constant weight at a temperature of 105 degrees, Centigrade. The pH value shall be between pH 6.0 and pH 6.5. It shall contain no toxic materials. Soluble salts shall not be greater than 75 parts per million. Add soil amendments if required at no additional cost to the Authority.

5. A representative sample of loam shall be tested. The Contractor shall deliver samples to testing laboratory, have testing report sent directly to the Engineer, and pay all costs.

6. Mechanical and chemical (pH soluble salts) analysis shall be by a public extension service agency or a certified private testing laboratory in accordance with the current "standards" of the "Association of Official Agricultural Chemists" (AOAC).

7. Reports shall be submitted at least 14 days before any loaming is to be done. Soil samples

shall be tested for Nitrate Nitrogen, Ammonium Nitrogen, Phosphorus, Potassium, Calcium Aluminum, Soluble Salts and show the acidity of the soil.

8. Fertilizer:

a. Commercial fertilizer, peat, humus or other additives shall be used to counteract soil deficiencies as recommended by the soil analysis and as directed by the Engineer.

b. Commercial fertilizer shall be a product complying with the State and United States Fertilizer Laws. It shall be delivered to the site in the original unopened containers. The containers shall bear the manufacturer's certificate of compliance covering analysis. The certificate shall be furnished to the Engineer. At least 50% by weight of the Nitrogen content shall be derived from organic materials. Fertilizer shall contain not less than the percentages of weight of ingredients as follows or as recommended by the soil analysis:

	Nitrogen	Phosphorous	Potash
For Deciduous Trees	10% 6%	4%	

c. Ground limestone shall be an approved agricultural dolemite limestone containing not less than 85% of total calcium or magnesium carbonates. Limestone shall be ground to such fineness that 50% will pass through a 100 mesh sieve and 95% will pass through a 20 mesh sieve.

d. Humus shall be natural humus, reed peat or sedge peat which has been stockpiled for at least one year prior to its use. It shall be free from excessive amounts of zinc, low in wood content, free from hard lumps and in a shredded or granular form. According to the methods of testing of A.O.A.C., latest edition, the acidity range shall be approximately 5.5 pH to 7.6 pH and the organic matter shall be not less than 85% as determined by loss on ignition. The minimum water absorbing ability shall be 200% by weight on an oven-dry basis.

e. Peat moss shall be composed of the partly decomposed stems and leaves of any or several species of sphagnum moss. It shall be free from wood, decomposed colloidal residue and other foreign matter. It shall have an acidity range of 3.5 pH to 5.5 pH as determined in accordance with the methods of testing of A.O.A.C., latest edition. Its water absorbing ability shall be a minimum of 1,000% by weight on an oven-dry basis.

f. Superphosphate: Superphosphate shall be composed of finely ground phosphate rock as commonly used for agricultural purposes containing not less than 18% available phosphoric acid.

B. MULCH

1. Shredded aged pine bark mulch shall be fibrous pliable slices, not exceeding ½ inch in width or three inches in length. It shall be 98 percent organic matter with the pH range of 3.5 to 4.5 and a moisture content of packaged material not to exceed 35 percent.

PART 3 - EXECUTION

3.01 PLANTING LOCATIONS

A. All mulch locations shall be staked out on the ground and the locations must be approved by the Engineer before any excavation is started. If it is necessary to adjust any of the locations, because of unforeseen problems, the changes shall be under the direction of the Engineer and there shall be no extra charges for these adjustments. The mulch shall be placed in one layer 4" thick and raked smooth.

3.02 TREE PIT EXCAVATIONS

A. Holes for tree pits shall be at least three times the diameter of the spread of the root ball or root system and at least 12 inches deeper than the depth of the root ball.

PART 4 - MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

A. Separate Measurement and Payment will not be made for the work of this Section. All costs in connection therewith shall be considered incidental to the item of work to which they pertain.

1. Wood Chip Mulch will be measured by cubic yard complete in place.

4.02 PAYMENT

A. Wood Chip Mulch will be paid for at the Contract Unit Price for WOOD CHIP MULCH, Payment Item No. 0282.401.

4.03 PAYMENT ITEMS

Item No.	Description	Units
0282.401	WOOD CHIP MULCH	CUBIC YARD

END OF SECTION

SECTION 03100

CONCRETE FORMWORK

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section specifies designing, furnishing, constructing, and removing formwork, including falsework and centering, for cast-in-place concrete structures and members as indicated on the Contract Drawings and in accordance with Standard Specifications Construction Section 03100, except as modified herein.

1.02 QUALITY CONTROL

A. Design Criteria

1. Design and construct formwork in accordance with the details indicated and the applicable requirements of ACI 347R except as modified herein.

2. Formwork

b. Design forms to have sufficient strength to carry the dead weight of the concrete as a liquid; assumed values of live load and other forces to which it will be subjected during the construction period and to produce concrete meeting the specified tolerances. Maximum deflection of form facing materials reflected in concrete surfaces exposed to view: 1/240 of the span between structural members.

d. Design formwork to be readily removable without impact, shock or damage to concrete surfaces and adjacent construction.

B. Inspections

1. Hold Point: The Contractor and the Engineer will perform a pre-placement inspection to verify the formwork and all embedments comply with the Contract Documents. This pre-placement inspection is recorded on a form which is signed by the Contractor and the Engineer. Submit a copy to the Engineer. The MBTA will not allow concrete to be placed until all pre-placement checks have been made and are acceptable to the Engineer.

2. Hold Point: Notify the Engineer at least 72 hours before placing reinforcing bars so that the Site Inspector may inspect the formwork for compliance with the Contract Documents.

1.03 SUBMITTALS

B. Working Drawings

1. Show details of form systems; methods of form construction and erection; falsework; location and details of shoring and re-shoring; design computations' and locations of form joints, form ties, construction joints, anchor bolts, and embedments. Show all proposed placement sequences.

D. Submit inspection forms and reports as indicated herein.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Formwork

1. Plywood: Form Sheathing and Panels: Not less than 5/8 inch thick Exterior Type B-B Plywood Class I and II EXT-APA conforming to U.S. Product Standard PS-1-74. Provide Class II only on surfaces not exposed to view. Seal to prevent absorption of water from the concrete.

2. Steel Forms and Fiberglass-Reinforced Plastic Forms: As required to form concrete surfaces to the specified tolerances and finishes, free of irregularities and concrete stain.

3. Fiber Tubular Forms: Spirally constructed of laminated plies of fiber, with wall thicknesses as recommended by the manufacturer to meet load requirements of the various uses and sizes: wax coated outside surface for moisture resistance, and inside surface coated with bond-breaker compound and fabricated in such manner that finish concrete surfaces will be smooth and free of spiral and seam marking; sealed to prevent absorption of water from the concrete.

4. Form Ties: Accepted form clamps and factory-fabricated, snap-off metal type ties of adequate design to minimize form deflection and preclude concrete spalling upon removal: fabricated so that set-back in the concrete is such that the portion of the tie remaining after snap-off and removal of the exterior portions is at least two inches back from the concrete surface. Maximum diameter of spreader cones on tie wires: 7/8 inch. Wood spacers are not permitted within the pour.

5. Form Coatings: Provide commercial formulation form-coating compounds that will not bond with, stain, nor affect concrete surfaces, and will not impair subsequent treatment of concrete surfaces requiring bond or adhesion, nor impede the wetting of surfaces to be cured with water or curing compounds. Form Coatings must be compatible with paint systems, water-repellant coatings, or other indicated surface treatments.

6. Chamfer Strips: Triangular fillets milled from clear, straight-grain wood, surfaced each side: or extruded vinyl type.

PART 3 - EXECUTION

3.01 CONSTRUCTION

A. General

7. Provide keyways, recesses and other such features as required.

8. Prior to placement of concrete, inspect forms for cleanliness and accuracy of alignment.

9. Apply form coatings in accordance with manufacturer's specifications. Do not allow excess form coating material to accumulate in the forms. Do not allow form coatings to come in contact with construction joints or reinforcing steel.

10. Securely and accurately support anchor bolts in correct alignment and embedment during concrete placement.

B. Cleanouts and Openings

1. Provide temporary opening points where necessary to facilitate cleaning of forms and inspection of reinforcement immediately before concrete is deposited.

3. Make provisions in forms for openings, sleeves, chases, pipes, recesses, nailers, anchor bolts, anchors, ties, miscellaneous metal items and inserts, waterstops, dowels and reinforcing bars, and frames before concrete placement.

3.02 REMOVAL OF FORMS, FALSEWORK AND SHORING

A. Do not remove forms for a minimum of 2 days after concrete placement.

PART 4 - MEASUREMENT AND PAYMENT

4.01 GENERAL

A. No separate measurement or payment will be made for the Work required under this Section. All costs in connection therewith shall be considered incidental to the item of Work to which they pertain.

END OF SECTION

SECTION 03200

CONCRETE REINFORCEMENT

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section specifies furnishing and placing concrete reinforcement complete in place as indicated on the Contract Drawings and in accordance with Standard Specifications Construction Section 03200, except as modified herein.

C. Details of reinforcement and accessories not indicated shall be in accordance with ACI Detailing Manual SP66, ACI 315 and ACI 315R and shall be subject to acceptance by the Engineer.

1.02 QUALITY CONTROL

B. Inspections

1. Hold Point: Notify the Engineer at least 72 hours before anticipated concrete placement date so that the Site Inspector may inspect placement of reinforcement. The Contractor and the Engineer will perform a pre-placement inspection to verify the reinforcing steel complies with the Contract Documents. This pre-placement inspection is recorded on a form which is signed by the Contractor and Engineer. Submit a copy to the Engineer. The MBTA will not allow concrete to be placed until all pre-placement checks have been made and are acceptable to the Engineer.

1.03 SUBMITTALS

A. Shop Drawings and Data:

2. Shop Drawings. Show reinforcing steel detailed in conformance with ACI SP66 including material size, cutting and bending diagrams and dimensions, placement plans and details, embedment lengths, splicing and lap lengths, drilled in dowels and anchors, embedments, welded wire fabric and marking for each reinforcement item and accessory.

B. Certificates

4. Submit ISO Certificate for Polypropylene Manufacturer.

C. Manufacturer's Literature: Submit for approval manufacturer's literature for all items specified including but not limited to; polypropylene fibers, and reinforcing supports.

D. Reports and Procedures

1. Submit inspection forms and reports to the Engineer.

2. Submit pre-placement reports and forms to the Engineer.

1.04 PRODUCT DELIVERY, HANDLING AND STORAGE

C. Store reinforcing materials in a manner to prevent excessive rusting and fouling with dirt, grease and other bond-breaking coatings.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Reinforcing Steel Bars: Deformed type conforming to ASTM A615, Grade 60. Reinforcing bars specified to be epoxy coated shall comply with the additional requirements of ASTM A775.

G. Supports. Provide supports, such as chairs, bolsters, spacers, blocks, hangers, or other devices to support and position reinforcement, of adequate strength and accepted design to prevent displacement of reinforcement. Metal accessories must comply with CRSI Manual of Standard Practice. Supports of any type coming in contact with formwork shall be plastic or stainless steel. Precast concrete block bar supports must have a compressive strength of 6000 psi at time of use and comply with additional provisions of CRSI Manual of Standard Practice.

H. Polypropylene Fibers for Concrete Reinforcement:

1. Materials
   a. 100% Virgin (non-recycled) polypropylene, fibrillated, multi-design gradation fibers containing no reprocessed olefin materials and specifically manufactured for use as concrete secondary reinforcement.

2. Physical Characteristics
   a. Specific Gravity: 0.91
   b. Fiber Length: Multi-Design Gradation. Fiber lengths shall range from 2" but not to exceed 1" in length.
   c. Comply with ASTM C-1116 Type III, 4.1.3, ASTM C-1116 (Ref. ASTM C-1018) Performance Level 1, I5 outlined in Section 21, Note 17.

3. Fiber manufacturer must have ISO 9002 certification of manufacturing facility.

PART 3 - EXECUTION

3.02 PLACING AND FASTENING

F. Straighten rolled wire mesh reinforcement into flat sheets before use. Lap joints 8 inches and wire securely. Extend mesh to within 2 inches of sides and ends of slabs.

I. Protective Cover. Minimum protective cover for reinforcement shall be as indicated on the Drawings.

J. Do not field bend bars partially embedded in concrete unless approved in writing by the Engineer.

K. Provide polypropylene fiber reinforcement in all concrete for station platform slabs and sidewalks. Refer to Specification Section 03310, Portland Cement Concrete for application rate.

3.03 BAR SUPPORTS AND SPACERS

B. Support reinforcing steel located in the bottom of slabs resting on earth on precast concrete blocks of the proper size and dimensions to position the steel. Brick masonry, wood, rocks and similar items are not allowed.

PART 4 - MEASUREMENT AND PAYMENT

4.01 GENERAL

A. No separate measurement or payment will be made for the Work required under this Section. All costs in connection therewith shall be considered incidental to the item of Work to which they pertain.

END OF SECTION

SECTION 03300

CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section specifies placing, curing, protecting, and finishing cast- in-place normal weight concrete as indicated on the Contract Drawings and in accordance with Standard Specifications Construction Section 03300, except as modified herein.

F. The responsibility for coordinating concrete placement with embedded items rests solely with the Contractor.

1.03 SUBMITTALS

C. Product Data: Submit manufacturer's descriptive product data and current specifications covering products herein. Include installation instructions.

D. Samples: Submit samples of materials being used when requested by the Engineer including names, sources and descriptions.

E. Certification by the curing compound manufacturer certifying the curing compound as non-detrimental to the bond of the finish materials including but not limited to concrete sealers and water repellents.

F. Submit a detailed written procedure describing the Hot and Cold Weather concreting procedures and normal concreting procedures prior to placing any concrete. These procedures are subject to revision by the Engineer at no additional cost to the Authority.

G. Submit testing and inspection reports and forms as required herein to the Engineer.

H. Certification from the water repellant/anti-graffiti coating manufacturer that curing compound is compatible and will not affect water repellant/anti-graffiti coating performance.

1.04 JOBSITE CONDITIONS

A. Notification Point: At least 72 hours prior to actual placement, notify the Engineer of the intention to produce and place concrete. Refer to Specification Section 03200 - Concrete Reinforcement for Hold Point requirement.

B. Notification Point: Whenever possible, place concrete during normal working hours. When concrete placement schedules require concrete placement at times other than the normal working hours, notify the Engineer of the special conditions at least 72 hours in advance of placement.

D. Hold Point: Do not place concrete until the depth, character and water conditions of the foundations, the adequacy of forms and falsework, the absence of debris in the forms, the condition of the joints, and the conditions of spacing and location of reinforcement and embedded items have been inspected and accepted by the Engineer.

E. Hold Point: Do not place concrete until conditions and facilities for the storage, handling and transportation of concrete test specimens, including but not limited to laboratory-cured specimens and field-cured specimens, are in compliance with the requirements of ASTM C31. These conditions and facilities will be inspected and accepted by the MBTA's Materials Testing Laboratory. Specimens stored on site must be protected from damage to the satisfaction of the Engineer. The Authority reserves the right, at any time, to inspect conditions and facilities for compliance with ASTM C31 and require changes to Contractor's procedures at no additional cost to the Authority.

F. Hold Point: Do not place concrete until cold weather and hot weather concreting procedures and normal concreting procedures are approved by the MBTA's Materials Testing Laboratory.

G. Hold Point: Do not place concrete until materials for curing are on the jobsite at the start of each placement.

1.05 CONTRACTOR'S PRE-PLACEMENT MEETING

A. At least 2 weeks prior to concrete placement, meet with the manufacturer's representatives of the polypropylene fibers, the curing compound, the water repellant/anti-graffiti coating, the corrosion inhibitor, the Engineer, the MBTA's Site Inspector and the Authority's Materials Testing Laboratory to review the proper use of all products and any special concrete placement, finishing or curing requirements.

1.06 CONTROL TESTING

A. The Contractor is responsible to perform such tests and inspections as required to assure that concrete meets specified requirements.

1.07 ACCEPTANCE TESTING

A. The Engineer shall be responsible for making and testing concrete cylinders.

PART 2 - PRODUCTS

2.01 MATERIALS

D. Liquid Membrane - Forming Curing Compound: ASTM C309, Type 1-D, clear or translucent with fugitive dye. Use Type 1 on surfaces not exposed to direct sunlight. Where a finish material is to be applied over concrete, curing compounds must be free of adhesive bond breaking ingredients. Curing compound must be acceptable to the water repellant coating manufacturer.

E. Water Proof Curing Sheet: ASTM C171 white burlap polyethylene sheets, waterproof paper or polyethylene film. Materials shall not stain or affect concrete finish or lessen the concrete strength. Use white reflective type materials to reduce temperature rise in concrete exposed to radiation from the sun when dictated by weather conditions.

F. Burlap Sheet: AASHTO M182, Class 3 or 4. Materials shall not stain or affect concrete finish or lessen the concrete strength.

J. Expansion Joint Materials and Premolded Fillers

1. Preformed Expansion Joint Filler and Premolded Filler.
   a. Non-extruding and resilient bituminous types: ASTM D1751.
   b. Pre-formed sponge rubber and cork type: ASTM D1752, type as indicated, or, if not indicated, at the Contractor's option.
   c. Dimensions: One-half inch thick unless indicated otherwise; extending the full depth of the joint less one-half inch where sealant is to be used.

2. Sealants: Section 07920.

L. Epoxy Bonding Agent: Structural load bearing epoxy adhesive, 100% reactive, moisture insensitive, two component epoxy resin. Intended for use in bonding freshly mixed portland cement concrete to hardened concrete. Epoxy Bonding Agent must comply with ASTM C881, Type V. Product grade and class shall be as recommended by the manufacturer based on intended application and substrate temperature. Color shall be concrete grey or clear when exposed to view.

M. Epoxy Grout: Structural load bearing epoxy grout, 100% reactive, moisture insensitive, two component epoxy resin, intended for use in grouting reinforcing steel and anchor bolts to hardened concrete. Epoxy Grout must comply with ASTM C881, Type IV. Product grade and class shall be as recommended by the manufacturer based on intended application and substrate temperature. The epoxy resin system must develop the full yield strength of the reinforcing steel and anchor bolts based on the results of unconfined pull-out testing. ASTM E488.

N. Bond Breaker: Polyethylene Sheet. 0.01 inch thick.

P. Water Repellent/Anti-Graffiti Coating:
1. Blok-Guard & Graffiti Control, by Prosoco, Inc.
or Approved Equal

PART 3 - EXECUTION

3.02 INSPECTION.

A. Hold Point: Inspect forms, reinforcing steel, anchor bolts and other embedded items for deficiencies which would prevent proper execution of the Work. Contractor must document all inspections on an inspection form. Do not proceed with placing until such deficiencies are corrected and the Engineer accepts the conditions of the previously noted items in writing and authorizes concrete placement.

1. Anchor Bolts: Verify anchor bolts comply with the requirements indicated in the Contract Documents, including but not limited to, materials, embedment, exposed length, diameter, spacing, and locations.

3.03 TRANSPORTATION AND PLACEMENT OF CONCRETE

A. General. Conform to the concreting procedures set forth in ACI 304R and the requirements specified herein.

1. Prepare formwork in advance and remove snow, ice, water and debris from within forms.

2. Pre-position reinforcement in advance of concrete pours.

3. Pre-position expansion joint material, premolded fillers, anchors, embedded items, etc.

4. Wet subgrade in accordance with ACI to eliminate water loss from concrete.

5. Do not place concrete on frozen surfaces. Do not place concrete in contact with surfaces with temperatures below freezing including but not limited to reinforcing steel, steel embedments, formwork and subgrade,

6. At time of concrete placement reinforcement shall be free from mud, oil, or other coatings that adversely affect bonding capabilities.

7. The MBTA's Site Inspector will observe mixing and delivering operations to verify that the Contractor is producing concrete as specified. Results of these inspections will be recorded.

8. Proper placement techniques will be inspected and recorded by the MBTA's Site Inspector.

B. Transporting

3. Each truck will be required to have working water site-glass indicators and revolution counters. Contractor shall verify noted equipment functions.

C. Conveying. Convey concrete from the mixer to the place of final deposit in the forms by one of the following methods which will permit handling at the specified slump without segregation or loss of ingredients to maintain required quality of concrete.

5. Do not convey concrete through aluminum or aluminum alloy.

6. Do not place concrete by pumps or other similar devices without prior written approval of the Engineer.

D. Placing

1. Deposit concrete at or near its final position in the formwork, in a manner that will preserve the desired properties of water-cement ratio, slump, air content, and homogeneity. Place concrete in horizontal layers 12 to 18 inches thick completely across the forms, avoiding inclined layers and cold joints. On sloping surfaces, place concrete at the lower portion of the slope first.

2. Do not allow concrete to fall freely in the forms for a distance exceeding three feet. Do not move concrete horizontally more than three feet from point of discharge. Space points of deposit not more than 10 feet apart.

4.

c. Hold Point: Do not proceed with concrete placement until method of placement has been accepted by the Engineer.

5. Carry on placing at such a rate that concrete which is being integrated with fresh concrete is still plastic.

6. Do not deposit concrete on concrete which has hardened sufficiently to cause the

formation of seams or planes of weakness within sections.

7. Do not use concrete which has partially hardened or has been contaminated by foreign materials.

8. Do not subject concrete to procedures which will cause segregation.

9. Do not place concrete in forms containing standing water.

10. Once started, concreting shall be carried on as a continuous operation. Make placement within sections continuously to produce monolithic unit.

11. Do not bend reinforcement out of position when placing concrete.

12. At approved construction joints, remove laitance and other unsound material before additional concrete is placed against hardened concrete.

13. Retempered concrete or concrete that has been remixed after initial set shall not be used.

E. Placing Concrete Under Water

6. Hold Point: Do not place concrete under water until method of placement has been approved by the Engineer.

G. Consolidation

1. Unless otherwise directed, consolidate all concrete by the use of approved mechanical vibrators operated within the mass of the concrete. Conform to the procedures set forth in ACI 309, and the requirements specified herein.
   a. Work concrete around reinforcement, embedded items and into corners. Eliminate all air or stone pockets and other causes of honeycombing, pitting or planes of weakness.
   b. Use vibration equipment of internal type and not the type attached to forms and reinforcement.
   c. Use vibrators capable of transmitting vibration to concrete in frequencies sufficient to provide satisfactory consolidation.
   d. Do not leave vibrators in one spot long enough to cause segregation. Remove concrete segregated by vibrator operation.
   e. Do not use vibrators to spread concrete.

3.04 CURING AND PROTECTION

A. General

5. The MBTA's Site Inspector will observe the Contractor's curing activities and record results.

6. Verify and document that curing is being performed in accordance with the Contract Documents and the approved concreting procedures.

B. Methods of Curing

4. Membrane Curing

b. Apply the membrane curing compound uniformly over the concrete surface by means of an accepted mechanical spray machine at the rate of not less than 1 gallon per 150 sq. ft. of surface or as recommended by the manufacturer. To ensure uniform consistency and dispersion of the pigment, agitate the curing material in the supply container immediately before transfer to the distributor, and thoroughly agitate it during application unless instructed otherwise by the manufacturer.

C. Duration of Curing and Protection. Continuously cure and protect concrete for a period of not less than seven days after placing. In every instance, curing procedures shall be subject to the approval of the Engineer.

E. Protection from De-Icing Agents.

2.

b. Protective treatment shall be as required by the Authority's Materials Testing Laboratory at no additional cost to the Authority.

3.05 HOT WEATHER CONCRETING

A. General

1. When mixing, transporting, placing, finishing, and curing concrete in hot weather, comply with ACI 305R and the directions of the Engineer.

3. Hold Point: Do not place concrete under hot weather conditions until hot weather concreting procedures have been approved by the Engineer.

3.06 COLD-WEATHER CONCRETING

A. General

1. When mixing, transporting, placing, finishing and curing concrete in cold weather, conform to ACI Standard 306R and the directions of the Engineer.

3. Hold Point: Do not place concrete under cold weather conditions until cold weather concreting procedures have been approved by the Engineer.

C. Preparation and Curing

1. Do not place concrete until satisfactory arrangements for covering, insulating, or housing of newly-placed concrete are made in advance of placement and approved by the Engineer. Select a method of protection which conforms to Chapter 7 of ACI 306R, and is adequate to maintain, in all parts of the concrete, the temperature and moisture conditions recommended for winter curing procedures as herein specified. Curing conditions, in addition to providing adequate temperature control as specified, shall include procedures to prevent undesirable drying of the fresh concrete. When dry heating is used, cover the concrete with an approved impervious material, or curing compound, or water-cure the concrete.

2.

c. In any case, the periods of time specified above are minimum requirements, and extensions of these periods of time will be required when necessary to develop satisfactory strength in the concrete. Time extensions required by the Engineer shall be made at no additional cost to the Authority. Should the Contractor wish to secure permission to use other methods than those specified herein, he shall submit such request in writing to the Engineer including verification and satisfactory evidence of the adequacy of intended methods. In any case, only approved methods of protection and curing will be allowed.

D. Temperature Records. Provide, install and maintain adequate and effective temperature recording devices, as directed by the MBTA's Materials Testing Laboratory. Take measurements not less than twice per 24 hour period. Record maximum and minimum temperature readings in each 24-hour period. Submit temperature readings to the Engineer within 12 hours of taking the measurements. Include a copy of the temperature readings in the permanent records of the job. MBTA's Site Inspector will keep a record of the date, time, outside air temperature, temperature of concrete as placed, and the temperature history of each part of the concrete during the specified curing period. Submit records to Engineer within 12 hours of taking the measurements.

3.07 DEFECTIVE CONCRETE WORK AND REPAIR OF DEFECTIVE CONCRETE

A. Defective Concrete Work

1. Porous areas, open or porous construction joints and honeycombed concrete will be considered to indicate that the requirements for mixing, placing and handling have not been complied with and will be sufficient cause for rejection of the members of the structure thus affected.

2. All concrete not complying with specified tolerances will be cause for rejection.

3. Defective work exposed upon removal of forms shall be entirely removed or repaired. Defects include but are not limited to tie holes, air voids, bug holes, fins, burrs and other defects which are not acceptable to the Engineer.

4. Repaired areas will not be accepted if:
   a. The structural requirements have been impaired;
   b. The bond between the steel and concrete has been reduced; and
   c. The area is not finished to conform in every respect to the texture, contour, and color of the surrounding concrete.

5. If the above requirements are not satisfied, the Engineer may require that the item involved be entirely removed and satisfactorily replaced at no additional expense to the Authority.

B. Repair of Defective Concrete

1. Repair of Formed Surfaces:
   a. As soon as possible after stripping forms, thoroughly clean and fill holes left by form ties, and other temporary inserts, and perform corrective work.
   b. Repair and patch defective areas, including but not limited to defects having a

diameter or depth less than 1/4 inch, with cement mortar of mix proportions and materials identical to those used in the surrounding concrete; and produce a finish on the patch that is indistinguishable from the finish of the surrounding concrete, immediately after removing forms, in a manner and by a method accepted by the Engineer in writing prior to start of repair operation.

c. Cut out honeycomb, rock pockets, and voids having a diameter or depth greater than 1/4 inch. Make edges of cuts perpendicular to concrete surface. No feather edges will be permitted. Before placing cement mortar, thoroughly clean and dampen the area to be patched and an area at least 6 inches wide surrounding it to prevent absorption of water from the patching material. Brush-coat area to be patched with neat cement grout. Proprietary patching compounds may be used if accepted by the Engineer in writing prior to start of repair operation.

d. Remove imperfect texture, laitance, fins and roughness by rubbing affected areas with concrete block or carborundum stone until smooth and uniform.

e. Keep the patched area damp for 5 days.

f. Do not cut reinforcing steel during repair operations.

g. Repaired areas shall be indistinguishable from the color and finish of the surrounding concrete.

2. Repair of Unformed Surfaces:

a. Test unformed surfaces for smoothness and to verify conformance of surface plane to tolerances specified. Correct low and high areas.

b. Test unformed sloped surfaces for trueness of slope and smoothness, using a template having required slope. Correct high and low areas as specified.

c. Repair finished unformed surfaces which contain defects which adversely affect durability of the concrete.

d. Grind high areas in unformed surfaces after concrete has cured sufficiently to permit repairs without damaging adjacent areas.

e. Cut out low areas in unformed surfaces either during or immediately after completion of surface finishing operations, and replace with fresh concrete. Finish repaired areas to blend into adjacent concrete. Proprietary patching compounds may be used if acceptable to the Engineer.

f. Cut out defective areas, except random cracks and single holes not exceeding 1 inch diameter, and replace with fresh concrete. Remove defective areas to sound concrete with clean, square cuts, and expose reinforcing steel with at least 3/4 inch clearance all around. Dampen concrete surfaces in contact with patching concrete and brush with neat cement grout coating or use specified concrete bonding agent. If repair is to a slab on grade use a bonding agent which meets the requirements of the specified bonding agent and which is not a vapor barrier. Submit bonding agent to Engineer for approval. Place patching concrete before grout takes initial set. Mix patching concrete of same materials and in same proportions as adjacent concrete. Place, compact, and finish as required to blend with adjacent concrete. Cure in same manner as adjacent concrete.

g. Repair isolated random cracks and single holes not over an inch in diameter by the dry-pack method. Groove tops of cracks, cut out holes to sound concrete, and remove dust, dirt, and loose particles. Dampen cleaned concrete surfaces and brush with neat cement grout coating. Mix dry-pack, consisting of one part portland cement to 2-1/2 parts fine aggregate passing No. 16 sieve, using only enough water for handling and patching. Place dry-pack before grout takes initial set. Compact dry-pack mixture in-place and finish to match adjacent

concrete. Keep patched areas continuously moist for 5 days.

h. Obtain approval of the Engineer before performing repair work other than the removal of imperfect texture, filling of pin holes, holes less than 3/4-inch wide, and insert holes. The Engineer will determine whether the defective area is sufficiently imperfect to warrant rejection of the structural unit.

i. Repair methods not specified above may be used, subject to acceptance by the Engineer in writing.

j. Do not cut reinforcing steel during repair operations.

k. Repaired areas shall be indistinguishable from the color and finish of the surrounding concrete.

3. The Engineer will make the final determination as to the acceptability of concrete finishes and repair of surface defects.

3.08 FINISHING OF FORMED SURFACES

A. General

2. For concrete not exposed to view (below finish grade in contact with soil) provide a rough form finish unless noted otherwise.

3. For concrete exposed to view, finish formed surfaces with a smooth form finish with smooth rubbed finish.

a. Smooth Form Finish with smooth rubbed finish. Rubbing shall be produced on newly hardened concrete no later than the day following form removal. When required by the Engineer to correct work done in an incorrect manner or in a manner not as specified, rubbing shall commence within 48 hours of notification by the Engineer. Surfaces to be rubbed shall be wetted and rubbed with carborundum brick or other approved abrasive of equal quality until uniform color and texture are produced, without applying any cement, grout or other coating. Rubbing will not be permitted when the air temperature is expected to fall below 40 degrees F. Rubbing may be performed by use of approved power equipment and tools, providing the operational procedures shall produce the same desired effects as hand rubbing.

3.09 FINISHING OF UNFORMED SURFACES

K. Specified Finish

1. Floated Finish: Base slabs receiving bituminous setting bed and pavers

2. Troweled Finish: Exposed horizontal surfaces of walls.

3. Broom Finish: Horizontal surfaces including but not limited to sidewalks and ramps. Broom in the direction perpendicular to the main traffic route. Match texture of existing work to remain.

4. Water Repellent/Anti-Graffiti Coating: All horizontal and vertical surfaces exposed to the weather.

3.10 JOINTS AND EMBEDDED ITEMS

A. Construction and Crack Control Joints

1. Place joints where indicated on the Contract Drawings and on the approved submittal drawings. Make joints straight and as inconspicuous as possible, and in exact vertical and horizontal alignment with the structure, as the case may be. Engineer reserves the right to revise joint locations at no additional cost to the Authority.

2. Thoroughly clean the surface of the concrete at construction joints and remove laitance prior to placing adjoining concrete. Where bonding is required, use only approved materials. Where bonding materials are not specified, wet the construction joints prior to concrete placement.

3. Reinforcement shall be continuous across construction joints. Provide keys and inclined dowels as shown on the Contract Drawings and as directed.

4. Place waterstops in construction joints as shown on the Contract Drawings and as directed by the Engineer.

5. Locate and make construction joints not indicated so as not to impair the strength of the structure. Obtain acceptance in writing by the Engineer.

6. Prior to revising locations of joints obtain Engineers approval.

C. Embedded Items

6. Aluminum Conduit and Pipe. Aluminum shall not be embedded in concrete unless effectively coated or covered to prevent aluminum-concrete reaction or electrolytic action between aluminum and steel.

D. Epoxy Bonding Agent and Epoxy Grout

1. Use epoxy products in strict compliance with manufacturer's written instructions.

3.11 WATER REPELLENT/ANTI-GRAFFITI COATING

A. Comply with manufacturer's printed installation instructions.

B. Concrete must be allowed to cure a minimum of 28 days.

C. Patching materials, caulking, sealants, paint, etc. must be fully cured before applying water repellent.

D. Surfaces to receive water repellant/anti-graffiti coating must be prepared to the satisfaction of the Engineer and the material manufacturer.

E. Mix and apply in strict accordance with manufacturer's instructions.

F. Protect glass, metal, plastic, other nonporous substrates, plants, and other adjacent surfaces from overspray.

G. Clean and repair all surfaces which are sprayed by water repellant overspray.

H. Coverage rate shall conform to manufacturer's instructions.

PART 4 - MEASUREMENT AND PAYMENT

4.01 GENERAL

A. No separate measurement or payment will be made for the Work received under this Section. All costs in connection therewith shall be considered incidental to the item of Work to which they pertain.

END OF SECTION

SECTION 03310

PORTLAND CEMENT CONCRETE

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section specifies Portland Cement Concrete including materials, batching, mixing, delivering, testing, and inspection as indicated on the Contract Drawings and in accordance with Standard Specifications Construction Section 03310, except as modified herein.

B. Classes of Concrete

5. The classes of concrete shall be as indicated on the Drawings and as specified.

1.02 QUALITY CONTROL

A. Testing and Inspection Services

1. Control Testing and Inspection - The Contractor is responsible for performing such inspections and tests as are necessary to assure that concrete meets specified requirements..

2. Acceptance Testing and Inspection - Hold Point
   a. Source of Supply - The MBTA's Materials Testing Laboratory shall sample and test concrete ingredients at the source of supply.
   b. Mix designs - The contractor shall submit each design for concrete mix proportions to the Engineer for approval as specified herein.
   c. Concrete Plant - The MBTA's Materials Testing Laboratory shall inspect and approve the Concrete Plant prior to the placement of any concrete.
   d. Concrete Cylinders - The MBTA's materials Testing Laboratory will make concrete cylinders during the placement of concrete as specified herein.
   e.
3. The Authority shall sample and test the concrete for compressive strength for the seven and twenty-eight day tests.

4. The Authority reserves the right at any time to inspect, test and to reject concrete to inspect concrete plants. All at no additional cost to the Authority.

5. The Contractor agrees to accept as indicative, the results of tests, including test results involving mix designs and field quality control of concrete mixtures. If, as a result of these tests, it is determined that the specified concrete properties are not being obtained, the Engineer may order such changes in proportions or materials, or both, as may be necessary to secure the specified properties, at no additional expense to the Authority.

6. The use of testing and inspection services shall in no way relieve the Contractor of his responsibility to furnish materials and construction in compliance with the Contract Documents.

7. Failure to detect any defective work or material shall not in any way prevent later rejection when such defect is discovered, nor shall it obligate the Engineer for final acceptance.

8. Additional testing and inspection services requested by the Contractor because of changes in materials, sources, or proportions; or occasioned by failure of tests and inspection to meet specifications requirements, shall be paid for by the Contractor. The costs for such additional testing and inspection services will be established by the MBTA's Materials Testing Laboratory.

9. Provide at no additional expense to the Authority all materials, labor, and services for sampling and testing required by the Authority's Materials Testing laboratory, including but not limited to:
   a. Transportation of sample materials from source to the Authority's Materials Testing Laboratory, 170 Freeport Street, Dorchester, Massachusetts.
   b. Preparation, handling, storage and transportation of concrete test specimens as directed by the MBTA's Site Inspector.
   c. Suitable containers for the storage, curing and transportation of concrete test specimens in accordance with ASTM C31.
   d. Suitable storage for a supply of test cylinder molds, test equipment and other items required for sampling and testing.

10. When additional sets of test cylinders beyond the mandatory seven and twenty-eight day tests are required by the Contractor to verify early form removal or other reasons for his benefit, the Authority shall be reimbursed for the costs of fabricating and testing these additional test cylinders. The Contractor has the option of obtaining additional test services from an Independent Testing Laboratory Agency approved by the Engineer. Copies of test data from these additional tests shall be submitted to the Engineer for review and approval.

B. Determination of Concrete Proportions

2. Unapproved Suppliers or Sources. When concrete materials to be incorporated into the work are to be obtained from a new or unapproved supplier or source, notify the Engineer in writing, not less than 35 days in advance of the schedule for concrete placement, as to the intended sources of concreting materials. Appropriate samples of concrete materials will be obtained by, or under the supervision of the Authority's Materials Testing Laboratory. Forward such samples to the Authority's Materials Testing Laboratory for testing and acceptance. Concrete mix design, trial mixes, and all related documentation shall be the responsibility of the Contractor's supplier. Proportion changes made after acceptance of initial mix designs will be permitted only as accepted by the Engineer.

4. Hold Point: Do not place any concrete in the work until the mix design has been accepted as specified herein.

6. All suppliers or sources of concrete materials shall determine concrete proportions in accordance with ACI 318-95 and must incorporate the proportion requirements specified in the Contract Documents. Acceptable methods of determining proportions are on the basis of field experience and/or trial mixtures.

C. Method of Sampling and Testing

7. The minimum number of test cylinders to be made each day for each class of concrete and for each placement will be four for each 100 cubic yards or less and minimum of four extra cylinders for each additional 50 cubic yards, or for each 5000 square feet of surface area for slabs or walls placed. When additional sets of test cylinders are required beyond the normal seven and twenty-eight day tests, each set will consist of a minimum of two test cylinders. A strength test shall be the average of the strengths of two cylinders made from the same sample of concrete and tested at 7 days and 28 days.

8. If the total volume of concrete is such that the frequency of testing required herein provides less than five strength tests for a given class of concrete, tests shall be made from at least five randomly selected batches or from each batch if fewer than five batches are used.

9. Laboratory-cured specimens: Laboratory-cured specimens shall conform to the following criteria.
   a. Samples for strength tests shall be taken in accordance with ASTM C172.
   b. Cylinders for strength test shall be molded and laboratory cured in accordance with ASTM C31, and tested in accordance with ASTM C39.

10. Field-cured specimens shall comply with the provisions of the Massachusetts State Building Code.

11. In addition to the specified requirements, the MBTA's Site Inspector and Materials Testing Laboratory will perform the following sampling and tests, on the first truck then periodically thereafter, and submit reports to the Engineer. In addition the results of these tests will be noted on the concrete delivery ticket.
   a. Air Content
   b. Slump
   c. Temperature

D. Evaluation and Acceptance of Tests

1. Acceptance of Concrete. The strength of each individual class of concrete will be considered satisfactory provided the averages of all sets of three consecutive strength test results equal or exceed the specified 28-day compressive strength, and no individual strength test (average of two cylinders) result falls below the specified 28-day compressive strength by more than 500 psi.

E. Acceptance of Structure. Acceptance of the completed concrete work will require conformance with the desired properties of dimensional tolerances, appearances, and strength as specified herein and in ACI 301.

1.03 SUBMITTALS

A. Design Mixes. Submit mix designs as specified in Article 1.02. Identify the manufacturer of polypropylene fibers in the mix design submitted for concrete where fibers are to be used. Mix designs shall include water-cement ratio. Make adjustments in the proposed mix designs as directed by the Engineer at no additional cost to the Authority. Mix designs and materials may not be revised without written approval by the Engineer and MBTA Materials Testing Laboratory.

B. Certificates

3. Submit certificates originated by the batch mixing plant certifying ready mixed concrete as manufactured and delivered to be in conformance with ASTM C94 and the requirements specified herein.
4. Submit certificate stating that all materials used in the mix design are compatible with specified curing compounds, sealers, water repellent coatings, and other materials which will come in contact with the concrete.
5. Submit certificates providing evidence of conformance to the quality standards for all materials specified herein.

E. Testing and Inspection Reports: Submit testing and inspection reports to the Engineer.

F. Submit manufacturer's literature for all products used in the concrete mix.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Portland Cement: ASTM C150.

1. Type II for all concrete work.

2. Use only one approved brand of cement throughout the work, unless otherwise accepted by the Engineer.

B. Admixtures: Use admixtures as specified herein and as accepted by the Engineer.

5. The use of calcium chloride is prohibited. The use of admixtures containing chloride from other than impurities from admixture ingredients is prohibited.

C. Water: Potable quality free from deleterious amounts of oils, acids, alkalis, salts and organic materials or other substances and exhibiting no deleterious effects upon the required concrete properties and reinforcement.

2.02 MIXES

A. General. Provide ready-mixed, air-entrained concrete composed of portland cement, aggregates, water, air-entraining and water-reducing admixtures, and other admixtures as accepted by the Engineer and the MBTA's Materials Testing Laboratory; secured from a single local plant which has been inspected and accepted by the MBTA's Materials Testing Laboratory; conforming to ASTM C94; capable of being placed without excessive segregation; and capable of developing the specified characteristics. Mixes must be compatible with surface coatings or finishes.

H. Water/Cement Ratio: 0.45 maximum.

J. Polypropylene Fibers: Mix in accordance with manufacturers instructions. Application rate is 1-1/2 pounds per cubic yard of concrete.

PART 4 - MEASUREMENT AND PAYMENT

4.01 GENERAL

A. No separate measurement or payment will be made for the Work required under this Section. All costs in connection therewith shall be considered incidental to the item of Work to which Portland Cement Concrete pertains.

END OF SECTION

SECTION 03410

STRUCTURAL PRECAST CONCRETE

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section specifies precast structural concrete platform edge beams as shown on the Drawings.

B. Related work specified elsewhere:

1. Cast-in-place concrete: Section 03300.

2. Sealants and caulking: Section 07920.

C. The work of this section shall conform to the following current standards at the time of manufacturing except as modified herein:

1. Precast/Prestressed Concrete Institute (PCI) Publication PCI Design Handbook Precast and Prestressed Concrete.

D. The requirements of Sections 03200 and 03310 shall apply to the work of this Section except as modified herein.

1.02 QUALITY ASSURANCE

A. Manufacturer's Qualifications and Quality Assurance:

1. The precast concrete manufacturing plant shall be certified by the Precast/Prestressed Concrete Institute, Plant Certification Program, prior to the start of production.

2. The Contractor must perform shop inspection during fabrication of precast concrete to ensure that fabrication is performed in accordance with the approved submittal documents and the Contract Documents. Develop an inspection form acceptable to the MBTA's Materials Testing Laboratory and submit completed form to the Engineer.
   a. In addition, shop inspections shall include but not be limited to the following:
      1. Verify location and installation details of the reinforcing steel and prestressing steel.

B. Testing:

1. In general compliance with testing provisions in MNL-116, Manual for Quality Control for Plants and Production of Precast and Prestressed Concrete Products.

C. Requirements of regulatory agencies:

1. Work shall conform to all applicable provisions of the latest editions, including supplements of all local codes plus the following specifications, standards and codes unless noted otherwise.
   a. ACI 318-95 Building Code Requirement for Structural Concrete.

b. ASTM Specifications - As referred to in Part 2. Products, of this Specification.
c. The Massachusetts State Building Code Sixth Edition.

D. Allowable Tolerances:

1. Manufacturing tolerances shall comply with PCI MNL-116 as a minimum. Implement stricter tolerances if required to comply with the requirements of this Contract.

2. The concrete units are removable. The Contractor is responsible for implementing Product, Erection and Interfacing tolerances which will allow the units to fit as detailed when installed and which will allow for removal and reinstallation in the future.

3. Prior to manufacturing, verify support conditions in the field. Adjust shop drawings to reflect actual field conditions.

1.03 SUBMITTALS

A. Shop Drawing:

1. Erection drawings:
   a. Member piece marks and completely dimensioned size and shape of each member.
   b. Plans and/or elevations locating and defining all products furnished by manufacturer.
   c. Sections and details showing connections, cast-in items and their relation to the structure. Locate all items including but not limited to lifting devices and inserts.
   d. Joints and openings between members and between members and structure.
   e. Description of all loose, cast-in and field hardware.
   f. Erection sequences and handling requirements.
   g. Lifting devices shall be located with consideration to the finished construction and shall be located to facilitate future removal and reinstallation of the concrete units.

2. Production drawings:
   a. Elevation view of each member.
   b. Sections and details to indicate quantities and position of reinforcing steel, anchors, inserts, etc.
   c. Lifting and erection devices.
   d. Dimensions and finishes.
   e. Methods for storage and transportation.
   f. All other information required for proper fabrication of the members.

B. Product design criteria:

1. Loadings for design:
   a. Initial handling and erection loads.
   b. Loads and stresses anticipated due to future removal and reinstallation of the concrete units.
   c. Thermal stresses.
   d. Arrange and combine loads to give maximum stresses for design of concrete units.

e. The reinforcing steel details shown on the Drawings are the minimum requirement. The precaster shall provide additional reinforcement as required to comply with the requirements of this Section.

2. Design calculations of products shall be performed by and, signed and sealed by a registered structural engineer licensed in the State of Massachusetts experienced in precast concrete design and submitted for approval on request.

3. Design shall be in accordance with applicable codes, and ACI 318, or AASHTO Standard Specifications for Highway Bridges.

4. Lifting devices shall be permanently installed and shall be reusable. Devices shall not interfere with the platform tactile edge installation, and shall include a metal or plastic plug to be installed prior to tactile edge installation.

C. Permissible design deviations:

1. Design deviations will be permitted only after the engineer's written approval of the manufacturer's proposed design supported by complete design calculations and drawings.

2. Design deviations shall provide an installation equivalent to the basic intent without incurring additional cost to the Authority.

D. Reports and Forms:

1. Submit when requested by the Engineer, reports on materials and, compressive strength tests on concrete.

2. Submit inspection and testing forms to the Engineer.

E. Certificates:

1. Submit evidence of current plant certification under the PCI Plant Certification Program.

2. Submit manufacturer's certifications for materials as required by PCI MNL-116.

1.04 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Delivery and Handling:

1. Precast concrete members shall be lifted and supported during manufacturing, stockpiling, transporting and erection operations only at the lifting or supporting points, as shown on the shop drawings, and with approved lifting devices. Lifting inserts shall have a minimum safety factor of 4. Reusable lifting hardware and rigging shall have a minimum safety factor of 5.

2. Transportation, site handling, and erection shall be performed with acceptable equipment and methods, and by qualified personnel.

B. Storage:

1. Store all units off ground.

2. Place stored units so that identification marks are discernible.

3. Separate stacked members by battens across full width of each bearing point.

4. Stack so that lifting devices are accessible and undamaged.

5. Do not use upper member of stacked tier as storage area for shorter member or heavy equipment.

6. Store units to ensure against cracking, distortion, staining, or other physical damage.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Portland Cement:

1. ASTM C150 - Type II or III..

B. Admixtures:

1. Air-entraining admixtures: ASTM C260.

2. Water reducing, retarding, accelerating, high range water reducing admixtures: ASTM C494.

3. Calcium chloride or admixtures containing chlorides shall not be used. Admixtures containing any chloride, other than impurities from admixture ingredients, are not to be used in precast or prestressed concrete.

C. Aggregates:

1. ASTM C33.

D. Water:

1. Potable or free from foreign materials in amounts harmful to concrete and embedded steel.

E. Reinforcing steel:

1. Bars:
   a. Deformed billet-steel: ASTM A615 Grade 60.
   b. Deformed low-alloy steel: ASTM A706.

F. Anchors and inserts:

1. Materials:
   a. Structural steel: ASTM A36.
   b Malleable iron castings: ASTM A47.

c. Stainless steel: ASTM A666, type 304.
d. Carbon steel plate: ASTM A283.
e. Bolts: ASTM A307 or A325.
f. Welded headed studs: AWS D1.1 - Type B.
g. Deformed bar anchors: ASTM A496.

2. Finish:
a. Shop Primer: Manufacturer's standards.
b. Hot dipped galvanized: ASTM A153.
c. Zinc-rich coating: MIL-P-21035, self curing, one component, sacrificial.
d. Cadmium coating: ASTM A165.

3. All permanent reusable lifting devices and other accessories embedded in precast units shall be hot dipped galvanized.

2.02 CONCRETE MIXES

A. Class 5000-3/4. Refer to Section 03310, Portland Cement Concrete for definition of 'Class'.

B. Conduct compressive strength tests for every ten units, or fraction there of, cast in any one day. Test two cylinders at 7 days, three cylinders at 28 days, and retain one cylinder for further testing as may be required.

C. Slump at point of discharge: Three inches maximum.

D. Air Content: Four to eight percent.

2.03 MANUFACTURE

A. Manufacturing procedures shall be in general compliance with PCI MNL-116 and as specified herein.

B. Notification Point: Notify the Engineer two weeks prior to the manufacture of units.

C. Notification Point: Notify the Engineer one week prior to shipment of units. All units shall be subject to inspection and approval by the Engineer prior to shipment from the fabricators facility.

D. Finishes:

1. Exposed Vertical Face: 03300, 3.08.A3

2. Top: Smooth trowel finish unless stricter finishing tolerances are required by the tactile edge manufacturer.

3. Marking: Provide permanent markings in precast, and precast prestressed units to identify pick-up points and orientation in the structure, complying with the markings indicated on the final shop drawings. Imprint the date of casting on each precast, and precast prestressed unit where it will not show in the finished structure.

E. Patching:

1. Shall be acceptable providing the structural adequacy of the product and the appearance are not impaired.

F. Fasteners:

1. Manufacturer shall cast in structural inserts, bolts and plates as detailed or required by the contract drawings.

PART 3 EXECUTION

3.01 ERECTION

A. Site access:

1. Provide suitable access to the work site, proper drainage and firm, level bearing for the hauling and erection equipment to operate under their own power.

B. Preparation:

1. Provide true, level bearing surfaces on all supporting members.

2. Place and accurately align bearing blocks, and other items in supporting members.

3. Provide all required shoring.

C. Installation:

1. Installation of precast concrete shall be performed by the manufacturer or a competent erector. Members shall be lifted by means of suitable lifting devices at points provided by the manufacturer. Temporary shoring and bracing, if necessary, shall comply with manufacturer's recommendations.

D. Alignment:

1. Members shall be properly aligned and leveled as required by the approved shop drawings. Variations between adjacent members shall be reasonable leveled out by jacking, loading, or any other feasible method as recommended by the manufacturer and acceptable to the Engineer.

2. Install units such that complete and uniform contact is made with the bearing blocks prior to placement of lean concrete bedding.

3.02 INSPECTION AND ACCEPTANCE

A. Erection inspections of precast concrete will be performed by the Contractor to verify compliance with the Contract Documents. The Contractor will record inspection results on a form acceptable to the MBTA's Materials Testing Laboratory and retain them on site. Submit one copy of the forms to the Engineer.

B. Final inspection and acceptance of erected precast, and precast, prestressed concrete shall be made by the Engineer.

C. In addition to the applicable requirements of Sections 03300 and 03310, and PCI MNL-116, precast, and precast, prestressed units may be rejected for any of the following reasons.

1. Exceeding specified installation tolerances.

2. Damage during construction operations.

3. Exposed-to-view surfaces which develop surface finished deficiencies.

4. Concrete units and details not complying with the requirement that the concrete slab units be removable.

PART 4 - MEASUREMENT AND PAYMENT

4.01 GENERAL

A. No separate measurement and payment will be made for the Work required under this Section. All costs in connection therewith shall be considered incidental to the item of Work to which they pertain.

END OF SECTION

SECTION 03604

NON-SHRINK CONSTRUCTION GROUT

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section specifies furnishing and installing non-shrink grout as indicated on the Contract Drawings and in accordance with Standard Specifications Construction Section 03604, except as modified herein.

1.02 SUBMITTALS

C. Submit manufacturer's product literature.

1.03 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver all cement-based grout materials in original (pre-packaged) tightly sealed, polyethylene-lined, multiple ply bags, clearly labeled with manufacturer's name, brand name and number, and batch number of the material. Store and handle in accordance with the manufacturer's instructions and ACI recommendations.

1.05 ENVIRONMENTAL CONDITIONS

A. Refer to the manufacturer's literature for any physical or environmental limitations.

1.06 CERTIFICATION

A. The material manufacturer shall certify that the non-shrink grout shall never go below its initial placement volume when tested in accordance with ASTM C827.

PART 2 - PRODUCTS

2.01 GENERAL

A. Pre-blended grout comprised of blended portland cements, graded silica aggregates, special plasticizing agents and other ingredients.

B. Conform to requirements of ASTM C1090 in conjunction with ASTM C827, and to the following performance requirements listed in Article 2.02.

C. The grout shall exhibit a small but predictable amount of expansion sufficient to counteract the normal shrinkage of cement, and shall be dimensionally stable. The expansion shall occur after initial set to insure maximum contact between grout and base plates. The grout shall be extremely flowable at low water levels and shall not bleed at moderate fluid levels nor exhibit segregation of aggregates. At a highly flowable consistency, high compressive strength shall be attainable in a 24-hour period with continuous build-up for 28 days. The resulting cured materials shall be very hard and highly resistant to penetration and breakdown by oils, water or vibration. Grout shall contain no iron particles, or other metallic particles such as aluminum powder, expansive cement, gypsum, gas forming agents, no added chloride, and shall not react

with magnesium.

2.02 PERFORMANCE REQUIREMENTS. When tested as provided herein, grout shall meet the following performance requirements at maximum water:

A. Plastic Volume Change. The grout shall show no shrinkage (0.0%) and a maximum 4.0% expansion from time of placement until final set when tested according to ASTM C827.

B. Hardened Volume Change. The grout shall show no shrinkage (0.0%) and a maximum 0.2% expansion in the hardened state when tested according to ASTM C1090.

C. Creep. The grout shall show creep equal to or less than .6 in. /in. x 10^{-3} at 70° F for a minimum of one year when tested according to CPR Creep Test (extrapolated data is not acceptable).

D. Working Time. The grout shall show a consistency greater than 125% for a minimum 45 minutes when tested according to applicable consistency sections of ASTM C827 at 15 minute intervals.

E. Compressive strength; ASTM C109 restrained:
1. At 7 days: 2500 psi minimum.
2. At 28 days: 5000 psi minimum.

F. Effective Bearing Area; 95% minimum. Effective Bearing Area is the percent final surface area of grout in direct contact with bearing plate.

2.03 DEGREASING AND ETCHING CHEMICAL

A. Composition and Materials: Blend of organic and inorganic acids with a special solvent system incorporating wetting agents for emulsification. Materials must be compatible with grout.

PART 3 - EXECUTION

3.01 PREPARATION OF CONCRETE AND STEEL SURFACES

A. In order to develop proper bond to the steel base plates and the concrete, remove ice, frost, dirt, oil, paints, dust, laitance, grease, curing compounds, impregnations, waxes, foreign particles, and disintegrated materials by mechanical abrasion methods such as sandblasting. Sandblast structural and reinforcing steel, except epoxy coated reinforcing and galvanized steel, to remove loose material and expose sound metal. Remove paint and other coatings, except galvanizing, from the bottom of steel base plates.

B. If the concrete surfaces are sound and it is only necessary to remove laitance, grease or dust, the Contractor may, with the prior written approval of the Engineer, forego sandblasting and wash the concrete with a degreasing and etching chemical applied in accordance with the manufacturer's written instructions and as specified herein.

C. Application of Degreaser and Etching Compound. Pre-wet concrete surfaces with clean water. Brush concentrated cleaner onto concrete surface. Let stand three to four minutes and reapply, brushing stained areas vigorously. Rinse off with fresh water applied at a minimum pressure of 800 psi and a minimum volume of five gallons per minute.

D. Construct appropriate sturdy forms to contain grout at the fluidity level at which it will be used. Saturate foundations and forms for a minimum of six hours unless directed otherwise by grout manufacturer's instructions prior to grouting. Remove all standing water or puddles prior to application of grout. Take special care to eliminate water from bolt holes and other cavities.

3.02 MIXING

A. Mix in strict accordance with manufacturer's instructions.

3.03 APPLICATION

B. Place grout within manufacturer's specified working time.

D. Rodding or chaining is only acceptable if approved in writing by the grout manufacturer to assist in placement or consolidation of grout. Excessive mechanical vibration may cause segregation of aggregates and will not be permitted.

E. Cool mixing water and grout when temperature exceeds 80 degrees F in the area to be grouted. Comply with ACI-305R. Cure and seal exposed grout with epoxy membrane curing compound to prevent rapid surfacing drying, shrinkage and cracking, or damp cure the grout. Comply with additional requirements of the grout manufacturer.

F. Heat mixing water and grout when temperature falls below 50 degrees F in the area to be grouted. Do not exceed 80 degrees F. Comply with ACI-306R. Do not add accelerators to grout. Comply with additional requirements of the grout manufacturer.

PART 4 - MEASUREMENT AND PAYMENT

4.01 GENERAL

A. No separate measurement or payment will be made for the Work of this Section. All costs in connection therewith shall be considered incidental to the item of work to which they pertain.

END OF SECTION

SECTION 05041

HOT-DIP GALVANIZING

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section specifies hot-dip galvanizing for all miscellaneous metal including but not limited to station sign frames, and connection hardware and fasteners.

B. Definitions:

1. Hot-Dip Galvanizing: The dipping of steel members and assemblies into an alloy of molten zinc and nickel for lasting long-term protection.

2. The resultant nickel-zinc alloys with the base metal.

1.02 QUALITY ASSURANCE

A. Reference Standard:

1. American Galvanizers Association Inc. (AGA): Publication entitled "Inspection Manual for Hot-Dip Galvanized Products."

2. American Society for Testing and Materials (ASTM)
   a. A123 - Zinc (Hot Galvanized) Coating on Products Fabricated from Rolled, Pressed, and Forged Steel Shapes, Plates, and Hardware.
   b. A153 Zinc Coating (Hot Dip) on Iron and Steel Hardware.
   c. A143 - Safeguarding Against Embrittlement.
   d. A384 - Safeguarding Against Warpage.
   e. A385 - Providing High Quality Zinc Coatings.
   f. A780 - Repair of Hot-Dip Galvanizing.

B. Certification:

1. Galvanizer:

   a. Furnish Notarized Certificates of Compliance with ASTM Standard and Specification listed.
   b. Each Certification to be signed by the Galvanizer and listing a detailed description of all material.
   c. State on Certification that the galvanizing is in full conformance with these Specifications.

C. Visual Stamp: The Galvanizer shall mark all lots of material with a clearly visible stamp or tag indicating the name of the galvanizer, the weight of the nickel-zinc coating, and the applicable ASTM Specification Numbers.

1.03 SUBMITTALS

A. Galvanizer will furnish to the Engineer a Notarized Certificate of Compliance with these

Specifications.

1.04 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Packaging: Of a suitable type to prevent damage to the finished surface and to prevent shipping damage to the material.

B. Handling and Storage: Handle and store in such a manner as to minimize damage to the finished material.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Steel:

1. Steel for Galvanizing: Geometrically suitable for galvanizing as specified in ASTM A384 and A385.

2. Chemically suitable for galvanizing, steel should contain carbon below 0.025 percent, phosphorous below 0.05 percent, and manganese below 1.35 percent.

B. Nickel-Zinc for Galvanizing: Conform with ASTM B6 as specified in ASTM A123 only with the addition to the bath of a predetermined amount of nickel, min. 0.05 percent by weight, to reduce the effect of high silicon steel.

2.02 GALVANIZING

A. Steel members, fabrication, and assemblies as identified in this Section shall be galvanized after fabrication in accordance with ASTM A123.

B. If the galvanized item is indicated to be primed (for future field painting or finish coated), the coating shall be applied by the galvanizer at same facility, within 12 hours of galvanizing, in accordance with SHOP PAINTING AND HOT-DIP GALVANIZING, Section 09910.

C. Field priming of hot dip galvanizing will not be permitted.

D. Safeguard against embrittlement in conformance with A143

E. Warpage or Distortion Prevention:

1. To safeguard against warpage or distortion of steel members, in conformance with ASTM A384, steel fabricator shall submit shop drawings of non-standard fabrications, all tubular fabrications, all fabrications involving any dimension which exceeds the size of the galvanizer's kettle, and any fabrication involving materials of different thicknesses.

2. Submit these drawings to the galvanizer before fabrication to determine the suitability of the material for galvanizing.

F. To prevent unnecessary damage to the finished coating by field welding, use bolted connections for field connections wherever possible.

G. Bolts, nuts and washers, and iron and steel hardware components shall be galvanized in accordance with ASTM A123/A153. Weight of zinc coating shall conform to requirements specified under "Weight of Coating" in ASTM A153. Nuts shall be tapped after galvanizing minimum diameter amount specified in ASTM A563. Coat nuts with waterproof lubricant, clean and dry to touch. High strength bolts for structural steel joints shall be galvanized in accordance with ASTM A325. Fastenings shall be galvanized using either hot dip or mechanical process. All fasteners and hardware for shop painted hot-dipped galvanized steel shall also be shop painted and touched up after final tightening.

H. Provide cut-outs in all steel members to be hot-dip galvanized, as required for venting and drainage to suit galvanizing process.

PART 3 - EXECUTION

3.01 INSTALLATION - STEEL MATERIALS

A. Steel materials, fabrications, and assemblies are specified in Sections 05500, and 05521.

3.02 TOUCH-UP AND REPAIR

A. Repair damaged galvanized surface in accordance with ASTM A780.

B. Dry Film Thickness: Min 6 mils of organic zinc-rich repair compound.

PART 4 - MEASUREMENT AND PAYMENT

4.01 GENERAL

A. No separate measurement or payment will be made for work required under this Section. All costs in connection therewith will be considered incidental to the item or items of work to which they pertain.

END OF SECTION

SECTION 05500

MISCELLANEOUS METAL

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section specifies furnishing and installing miscellaneous metal items in accordance with Standard Specifications Construction Section 05500, except as modified herein.

D. Miscellaneous metal includes, but is not limited to, stainless steel panels, brackets for rail, column base covers, shelter wind screens, and attachment hardware for connection of miscellaneous metal items to shelter structural steel.

E. Miscellaneous metal includes station sign frames and attachment hardware.

F. Related Work: Related requirements are included in, but not limited to, the following Sections.

1. Section 03300: CAST-IN-PLACE CONCRETE
2. Section 03604: NON-SHRINK CONSTRUCTION GROUT
3. Section 05041: HOT-DIP GALVANIZING
4. Section 06150: ROUGH AND FINISH CARPENTRY
5. Section 09360: MODULAR TACTILE SURFACES
6. Section 09900: PAINTING
7. Section 09910: SHOP PAINTING OF HOT-DIP GALVANIZED STEEL
8. Section 10400: FIBERGLASS SIGNS

1.02 QUALITY CONTROL

C. Welding Qualifications and Procedures:

11. Welders, welding operators and tackers for tube steel shall be qualified in accordance with AWS Dl.1 or AWS Dl.2 as applicable. Submit required records and data to the Engineer for approval.

PART 2 - PRODUCTS

2.01 CARBON STEEL

F. Tubing: ASTM A500, Grade B.

2.06 FASTENERS

G. Adhesive Anchors

1. Adhesive anchors shall be manufactured by one of the following manufacturers, or approved equal.
   a. Hilti HVA adhesive anchor system with HEA adhesive and HAS anchor rod assembly with nut and washer.
   b. ITW Ramset/Red Head, Epcon System.
   c. Moore Construction Production, Structural Anchoring System.

2. Size and type of material shall be as indicated on the Drawings.

H. All galvanized loose fasteners installed in field shall comply with metallic coatings specified in this Section.

2.12 METALLIC COATINGS

B. Zinc: Comply with Section 05041 - HOT DIP GALVANIZING.

2.14 PROTECTION OF DISSIMILAR METALS

F. Neoprene Rubber: 60 durometer, 1000 psi tensile, ASTM D-735 Grade: SC610, ASTM D-2000 Grade: BC610.

2.15 BELOW GRADE PROTECTIVE COATING

A. Tar Modified Liquid Epoxy: Type C coal tar modified system, AASHTO M200-65 (Epoxy Resin Systems).

PART 3 - EXECUTION

3.01 FABRICATION

B. Fabricated Products:

7. Sign Support Frames
   a. Provide tubular steel frames including connecting fasteners. All members shall be hot-dip galvanized and prime painted after fabrication.
   b. Fabricate steel framing with all joints neatly fitted, fully welded and ground flush and smooth.
   c. Provide plates to cover tube ends fully welded and ground smooth.

C. Connections:

1. Weld all shop connections unless otherwise indicated. Fabricate components for connection of members by welding, except do not exceed size that can be galvanized after fabrication. For connections made during fabrication, weld corners and seams continuously to comply with the following:
   a. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals. Procedures and materials used for welding shall conform to the current Specifications for the American Welding Society for metals involved with all welds ground smooth.
   b. Obtain fusion without undercut or overlap.

c. In assembling and during welding the component parts shall be held by sufficient clamps or other means to keep the parts straight and level.

d. Remove welding flux immediately. Welds shall be brushed with wire brushes, show uniform section, smoothness of weld metal. Feather edges without envelopes and freedom from porosity.

e. At tee and cross intersections, cope ends of intersecting members to fit contour of pipe or tube to which end is joined, and weld all around.

f. At exposed connections, finish exposed welds and surfaces smooth and blended so that no roughness shows after finishing and welded surface matches contours of adjoining surfaces.

5. Use high-strength bolts for bolted field connections, unless otherwise indicated.

3.02 ERECTION AND INSTALLATION

A. Install miscellaneous metal items and fabrications in their proper locations, anchored, rigid and secure, plumb and level unless otherwise shown on the Contract Plans, and in true alignment with related and adjoining work.

B. Use temporary bracing as necessary to accommodate loads to which structures may be subjected.

C. Install adhesive anchors in accordance with the manufacturer's instructions.

1. The Contractor shall avoid spillage of the adhesive when the assembly is installed in a horizontal position.

D. Provide permanent protection between dissimilar metals in contact with one another.

PART 4 - MEASUREMENT AND PAYMENT

4.01 MEASUREMENT AND PAYMENT

A. No separate measurement and payment will be made for the Work under this Section except as specified below. All costs in connection therewith will be considered incidental to the item or items of Work to which they pertain.

END OF SECTION

SECTION 06150

ROUGH AND FINISH CARPENTRY

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section specifies rough and finish carpentry as shown on the Drawings and as specified herein.

B. Work included, but not limited to:

1. Remove and Reinstalled Station Shelters:
   a. Furnish and install pressured-treated sill assembly.
   b. Furnish and install siding and trim.
   c. Furnish and install plywood in fill panels.

C. Related Work: Related requirements are included in, but not limited to, the following Sections:

1. Section 05500: MISCELLANEOUS METAL

2. Section 09900: PAINTING

1.02 SUBMITTALS

A. Submit the following for approval in compliance with SUBMITTALS, Section 01300, and with the additional requirements as specified for each.

B. Wood treatment data as follows, including chemical treatment manufacturer's instructions for handling, storing, installing, and finishing treated materials:

1. For each type of preservative-treated wood product, include certification by treating plant stating type of preservative solution and pressure process used, net amount of preservative retained, and compliance with applicable standards.
2. For waterborne-treated products, include statement that moisture content of treated materials was reduced to levels indicated before shipment to Project site.
3. Warranty of chemical treatment manufacturer for each type of treatment.

C. Building adhesive: Submit Manufacturer's literature and catalogue cuts.

D. Jacking Procedure: Submit details and sequence for lifting shelters clear from existing foundations. Indicate storage locations and method and details for temporary support.

1.03 DELIVERY, STORAGE, AND HANDLING

A. Keep materials under cover and dry. Protect from weather and contact with damp or wet surfaces. Stack lumber, siding, and trim material. Provide for air circulation within and around stacks and under temporary coverings.

1. For lumber pressure treated with waterborne chemicals, place spacers between each bundle to provide air circulation.

PART 2 - PRODUCTS

2.01 WOOD-PRESERVATIVE-TREATED MATERIALS

A. General: Where lumber is indicated as preservative treated or is specified to be treated, comply with applicable requirements of AWPA C2. Mark each treated item with the Quality Mark Requirements of an inspection agency approved by ALSC's Board of Review.

2.02 SHELTER SILL ASSEMBLY

A. Dimension Lumber: Conform to South Pine Inspection Bureau, National Design Specification for Wood Construction (NDS-97) and American Wood Preservers Association (AWPA) standards. Sill plates and studs shall be No. 2 or better Southern Pine, surfaced four sides, kiln dried to a maximum moisture content of 19%. The minimum retention levels of waterborne preservatives shall be as follows:

1. Bottom Sill Plate: 0.40 lbs/cu.ft.
2. Top Sill Plate and Studs: 0.25 lbs/cu.ft.

B. V-Groove Siding: Clear Honduran Mahogany or Clear Redwood milled to match profile of existing siding.

C. Trim: Solid PVC or Clear Redwood milled to match profiles of existing trim.

D. Plywood In-Fill Panels: Provide ¾ inch medium density overlay (MDO) exterior grade plywood surfaced on both sides.

E. Panel and Glazing Stops: Solid PVC or clear red wood milled to match profiles or existing trim.

2.03 FASTENERS

A. General: All fasteners shall be hot dip galvanized unless otherwise specified.

B. Anchor Bolts: Section 05500.

C. Framing Connections: FF-N-105B.

D. Siding Connections: FF-N-105B (concealed).

E. Trim Connections: Ring Shank Stainless Steel.

F. Match size, quantity, and spacing of existing fasteners.

2.04 BUILDING ADHESIVE: Section 07920

PART 3 - EXECUTION

3.01 INSTALLATION, GENERAL

A. Discard units of material with defects that impair quality of carpentry and that are too small to use with minimum number of joints or optimum joint arrangement.

B. Set carpentry to required levels and lines, with members plumb, true to line, cut, and fitted.

C. Fit carpentry to other construction; scribe and cope as required for accurate fit. Correlate location of furring, nailers, blocking, grounds, and similar supports to allow attachment of other construction.

D. Apply field treatment complying with AWPA M4 to cut surfaces of preservative-treated lumber.

E. Securely attach carpentry work as indicated and according to applicable codes and recognized standards.

F. Countersink nail heads on exposed carpentry work and fill holes with wood filler.

G. Use fasteners of appropriate type and length. Predrilled members when necessary to avoid splitting wood.

3.02 WOOD GROUNDS, NAILERS, BLOCKING, AND SLEEPERS

A. Install where shown and where required for attaching other work. Cut and shape to required size. Coordinate locations with other work involved.

B. Attach to substrates to support applied loading. Recess bolts and nuts flush with surfaces, unless otherwise indicated.

3.03 INSTALLATION OF ROUGH CARPENTRY

A. Set new wood framing accurately to match existing lines and levels. Provide new framing which matches existing framing sizes and spacing.

3.04 INSTALLATION OF FINISH CARPENTRY

A. Attach finish carpentry elements securely in place with uniform joints.

B. Blind nail finish carpentry elements where possible. Use stainless steel finishing nails where exposed. Set exposed nail heads and fill with putty.

PART 4 - MEASUREMENT AND PAYMENT

4.01 GENERAL

A. No separate measurement or payment will be made for work required under this Section. All costs in connection therewith will be considered incidental to the item or items to which they pertain.

END OF SECTION

SECTION 07920

SEALANTS AND CAULKINGS

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section specifies furnishing and installing sealant and caulking systems in accordance with Standard Specifications Construction Section 07920, except as modified herein.

B. Provide and install sealants and caulking as shown on the Drawings. Places to be sealed and caulked include, but are not limited to the following.

1. Expansion joints, cast-in-place walls, precast concrete barriers, pavement, glazing, woodwork, shelters, and site furnishings.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General Requirements:

4. Each container shall bear an unbroken seal and label of the manufacturer upon delivery at the site. Materials not conforming to this requirement will be rejected by the Engineer and shall be removed from the site by the Contractor and replaced with approved materials at no additional cost to the Authority.

5. In addition to other requirements, compounds shall contain no acids or ingredients that will affect masonry, corrode material, or have injurious effects on paint.

6. Use proper materials specified herein for each location where Drawings call for "caulking" or "sealant".

C. Multi-Component Polyurethane Sealants

3. Type D, Sealant: FS TT-S-00227E, Type I, Class A, having minimum ASTM C 920-79 Shore A hardness of 25-30, pourable and self-leveling.

I. Typical Back-Up Material, Fillers and Joint Packing:

3. Filler for all joints to receive sealant shall be premolded, compressible, closed-cell polyethylene foam applied under compression to approximately two thirds original width or similar compatible plastic foam recommended by the sealant manufacturer.

PART 3 - EXECUTION

3.03 APPLICATION

B. Usage:

4. At Overhead and Vertical Joints: Type C, non-sag.
6. At all other locations as shown on the Drawings, but not indicated herein before: Type A, non-sag.

F. Caulking and Sealant Application:

1. Caulking in joints shall strictly conform to manufacturer's specifications as to dimensions.

2. All locations where adequate grooves and depth for caulking applications have not been provided shall be prepared by cutting and cleaning out to the minimum depth and by grinding to the minimum width.

3. All particles of mortar, dust and other foreign matter shall be brushed out of joints and just prior to caulking application, the joint grooves shall be coated with an application of approved liquid primer. All joints shall be packed continuously and at proper depths using filler specified.

4. The compound shall be driven into the joint grooves with sufficient pressure to force out all air and solidly fill the joint groove.

5. Caulking, where exposed, shall be free of wrinkles and sags, and shall be filled slightly convex to obtain a flush joint when dry.

6. Upon completion, any caulked joints not entirely filled shall be corrected as directed by the Engineer and filled. Exposed surfaces of all caulked joints shall be tooled smooth.

7. The surfaces of all materials adjoining caulked joints shall be fully protected and kept clean and free of any smears of compound or other soiling due to caulking application.

PART 4 - MEASUREMENT AND PAYMENT

4.01 GENERAL

A. No separate measurement or payment will be made for work required under this Section. All costs in connection therewith will be considered incidental to the item or items of work to which they pertain.

END OF SECTION

SECTION 08800

GLAZING

PART 1 - GENERAL

1.01 DESCRIPTION

A. This section specifies the furnishing and installation of glass and glazing in accordance with Standard Specification Construction Section 08800, except as modified herein.

B. The work will include furnishing and installing Lexan polycarbonate windows in the station shelters.

PART 2 - PRODUCTS

2.01 PLASTIC MATERIALS

A. General

1. Polycarbonate type, coated on both faces as required to increase resistance to abrasion, meeting the following requirements.

a. Visible Light Transmission: Not less than 92 percent.

c. Impact Resistance: Successfully withstanding ANSI Z26.1 Test No. 13

d. Resistance to Weathering: Passing Weathering No. 16 of ANSI Z26.1.

e. Resistance to Abrasion: After the coated glazing plastic material has been exposed to 300 hours in the accelerated weathering apparatus, submit it to the following test with results as indicated:

Property	Test Method	Specification
MAR Resistance	ASTM D673	Less than five percent change in haze after 1,000 gram falling silicon Carbide.
Abrasion Resistance	ANSI Z226.1 Test 17	Less than five percent change in haze.
Abrasion Resistance	ASTM D1044	Less than five percent change in haze using a CS-17 calibraze wheel, 500-gram, 300 revolutions

2. Types

a. Type A: Typical, colorless or tinted as indicated, thickness as indicated.

2.03 GLAZING MATERIALS

A. Sealant: One part silicone type conforming to FS TT-S-00230, colors as indicated.

B. Gaskets: Provide structural gaskets conforming to the following requirements:

1. Neoprene synthetic rubber of the proper physical properties conforming to ASTM C542.

2. Provide gaskets fabricated into complete one-piece frames with injection molded radius corners as shown, with provisions to accommodate locking strip specified above.

C. Channels: Neoprene, conforming to the following requirements:

1. Exterior: 50 to 55 durometer

2. Interior: 55 to 75 durometer

D. Settling Blocks: Neoprene type, 85 to 90 durometer.

E. Spacer, Spacer Shims, and Wedges: Neoprene type, 50 to 75 durometer

F. Foam Plastic Tape: Closed cell vinyl type.

G. Pressure Tape: Preformed butyl-polyisobutylene sealant.

2.04 FABRICATION

A. Cut glass accurately at the factory, in accordance with manufacturer's recommendations.

PART 3 - EXECUTION

3.01 INSPECTION

A. Examine openings and glazing channels to receive glass and verify that they are free of projections, burrs, irregularities, and debris and other defects that would affect glass or plastic and glazing materials.

B. Inspect polycarbonate for edge damage or face imperfections.

C. Do not start glazing until defects have been corrected.

3.02 PREPARATION

A. Examine frames receiving plastic sheet and ensure they are clean and dry.

B. Verify that sealants are compatible with glazing materials.

C. Remove oil and dust from plastic materials by wiping clean immediately prior to installation.

D. Remove protective coatings or film from surfaces using solvent which shall neither etch nor mar surfaces.

3.03 INSTALLATION

A. General Glazing Requirements

1. Conform to Flat Glass Marketing Associations "Glazing Manual", manufacturer's recommendations and accepted working drawings.

2. Accurately size and cut plastic clean for each glazing condition. Do not nip edges.

3. Cut and set plastic to full fit and play consistent with expansion and contraction requirements and at exterior for absolute security under maximum high velocity wind or vacuum stresses.

4. Maintain edge clearance at least equal to plastic thickness from perimeter or plastic to inside of rabbet.

5. Maintain minimum 1/8-inch clearance between faces of plastic and adjacent stop or bead.

6. At exterior conditions provide setting blocks at sill to transmit windloads from plastic to sash. Provide shims at head and jambs at shop-glazed units.

7. If any glass dimension exceeds 50 inches, provide setting blocks at the sill and spacer shims on other edges.

8. Set glass as required to ensure against optical distortion.

B. Gaskets shall be cut to length of channel with mitered corners, with stretching. Lock strips shall be cut 1/8-inch longer than gaskets and forced into position in gasket channel after plastic is in place.

C. Glazing of Interior Metal Frames: Use pressure or foamed tape and sealant as indicated to eliminate rattle and reduce sound transmission.

D. Sealant Application

1. Conform to applicable requirements of Section 07920 unless specifically noted otherwise.

2. Neatly tool sealant or compound joints to compress materials and improve adhesion. Repair air pockets exposed by tooling.

3. Ensure protective coatings have been removed from aluminum surfaces.

4. Where setting blocks and spacer shims are requirement to be set into sealant, butter with sealant, place into position and allow to set prior to installation of glass.

3.04 PROTECTION. Protect installed glass and plastic against breakage, damage from sandblasting, welding spatter or other sources.

PART 4 – MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

A. Separate measurement will not be made from the work of this Section, complete in place, but all costs shall be included in the Contract Lump Sum Price for windows for the work as indicated.

4.02 PAYMENT

B. Payment for windows shall be made at the Contract Lump Sum Price under Item 0849.000 WINDOWS.

4.04 PAYMENT ITEMS

Item No.	Description	Unit
0849.000	WINDOWS	LUMP SUM

END OF SECTION

SECTION 09360

MODULAR TACTILE SURFACES

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section specifies furnishing and installing of modular paver tactile surface tiles precast with a 1 3/8" thick epoxy polymer concrete core at station platforms.

B. Related Work Specified Elsewhere:

1. Section 02515 – Asphalt Block
2. Section 03300 - Cast-in-Place Concrete
3. Section 03410 – Structural Precast Concrete
4. Section 07920 - Sealants and Caulkings

1.02 QUALITY ASSURANCE

A. Manufacturer: Tile must be manufactured by a company specializing in the manufacture of modular tactile surface tiles as used in transit systems for guidance of the sight impaired. Product must have been installed at other locations with successful records of performance.

B. Installer: The Installer must be a manufacture or manufacturer-approved installer with documented experience in work similar to that of this Section. The Installer must be approved by the Engineer before installation of the paver may begin.

C. Warranty: In addition to the requirements of the General Conditions, furnish a warranty jointly executed by the tile manufacturer and the installer. Warrant the work executed in this Section for a period of five years against failure of tile material, workmanship, and installation for the work performed under the supervision of the manufacturer of the tile. The Warranty shall include breakage, deformation, fading, chalking of finishes, loosening of tiles, and mechanical fasteners, which are used for securing the tiles to the platform.

D. For first time installers and suppliers of tactile tile to the MBTA, a meeting with representatives of the Engineer, Contractor, Surface Preparation subcontractor, Manufacturer, and Installer in attendance is mandatory. The agenda shall include the review and clarification of the specification, installation procedures, quality control, inspection and acceptance criteria and installation schedules. In no case will installation be allowed to commence until this meeting is held.

E. Mock-ups:

1. After approval of materials, erect a mock-up at the work site where directed as follows:
   a. Install an eight-foot-long tile mock-up, using all specified materials.
2. Assign the same construction crew to both the mock-up and the permanent work.
3. If not approved, remove and replace mock-up at no additional cost to the Authority. Repeat procedure until approval is granted.

4. Approved mock-up shall serve as the quality standard for appearance, tolerances, and workmanship.

5. Approved mock-up may be incorporated in the permanent work, with the following certification

   a. Manufacturer's certification that all products meet specified requirements, as verified by independent testing agency.

   b. Manufacturer's approval of installer, if other than manufacturer, and detailed work history with the product proposed for installation.

6 Protect and maintain approved mock-up in accepted condition throughout the construction period. When no longer required, remove and dispose of off site, if not incorporated into the permanent work.

1.03 SUBMITTALS

A. Shop Drawings: Show complete layout and fabrication details, composite structure, dimensions of tiled areas, and affected adjacent areas. Provide large scale plan details of the tiles at the curves, including fastener locations.

B. Product Data: Manufacturer's catalog cuts, material specifications, installation and maintenance instructions, and other data pertinent to the work of this Section.

1. Samples: One full-size sample of the type, size, pattern, and color of tile required, and two 24" x 24" samples for records.

2. Certification:

   a. Manufacturer's certification that all products meet specified requirements, as verified by independent testing agency.

   b. Manufacturer's approval of installer if other than manufacturer, and detailed work history with the product proposed for installation.

3. Support Stock: After completion of the work, furnish a minimum of five percent of the total amount of tile furnished, from the same manufactured lot as materials furnished for work of this Section, in sealed, protective packaging marked with Contract number, lot number and identification contents.

C. Certification: Provide manufacturer's certification that all materials meet specified requirements, as verified by an independent testing agency. Include certification that the installer is approved by the manufacturer of tiles.

D. Submit certified test reports for all tests shown in Article 2.02 B, indicating for each test whether or not the tile passes or fails the passing criteria. Test report shall be current and shall not predate he notice to proceed date of this contract by more than two years.

E. Submit record of past installations with contact references.

1.04 DELIVERY, STORAGE AND HANDLING

Deliver materials and products in unopened, factory labeled packages. Store and handle in strict compliance with manufacturer's instructions and recommendations. Store under cover and protect from all damage and pilferage

PART 2 - PRODUCTS

2.01 GENERAL

A. The modular tactile tile surface system shall differ from adjoining surfaces in resiliency or sound on cane contact as set forth by the latest requirements of the Americans with Disabilities (ADA) and the Massachusetts Architectural Access Board (AAB). Such reference is intended to establish quality and performance characteristics and meet the legal definition of the law.

2.02 MODULAR TACTILE SURFACE PAVER

A. Provide platform edge surfaces with 24 inch x 48 inch sections, as indicated on Drawings. Provide 1/8" minimum to 3/16"maximum thicknesses of the non-domed surface. The tactile paver shall be fabricated with a solid dome and solid body. Pavers shall be precast with a 1 3/8"thick reinforced epoxy polymer concrete core. Paver shall have a truncated dome design in patterns conforming to Americans with Disabilities Act Architectural Guidelines (ADAAG) requirements. Tiles shall have integral safety yellow color throughout the entire thickness of material.

B. Pavers must be chemically test certified to resist corrosion and color change and be resistant to ultraviolet rays. Tiles shall exhibit the following properties, and be tested using the corresponding test method, and meet the respective passing criteria, as follows:

a. **Property:** Water Asorption

Test Method: ASTM D570-95- Standard Test Method for Water Absorption of Plastics

Passing Criteria: No greater absorption than 0.35% of weight increase due to saturation.

b. **Property**: Compressive Strength

Test Method: ASTM D 695-91 - Standard Test Method for Compressive Properties of Rigid Plastics

Passing Criteria: 18,000 psi average compressive strength.

c. **Property:** Slip Resistance

Test Method: ASTM C1028-96 - Standard Test Method for Determining the Static Coefficient of Friction of Ceramic Tile and Other Like Surfaces by the Horizontal Dynamometer Pull-Meter Method.

	Passing Criteria:	Minimum coefficient of friction of 0.90 with Neolite under wet and dry conditions.
d.	**Property:**	Impact Resistance
	Test Method:	ASTM D 5420-96 - Standard Test Method for Impact Resistance of Flat, Rigid Plastic Specimen by Means of a Striker Impacted by a Falling eight Gardner Impact).
	Passing Criteria:	No cracks at ambient temperature.
e.	**Property:**	Accelerated Weathering
	Test Method:	ASTM G 26-96 - Standard Practice for Operating Light-Exposure Apparatus (Xenon-Arc Type) With and Without Water for Exposure of Nonmetallic Materials.
	Passing Criteria:	No deterioration, fading, or chalking of tile surface after 2,000 hrs. of exposure.
f.	**Property:**	Fire Resistance
	Test Method:	ASTM E 136-96a - Standard Method for Behavior of Materials in a Vertical Tube Furnace at 750 degrees C
	Passing Criteria:	Material shall conform to the contained criteria to be considered noncombustible.
g.	**Property:**	Flexural Strength
	Test Method:	ASTM C293-94 - Standard Test Method for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
	Passing Criteria:	24,000 psi average flexural strength.
h.	**Property:**	Stain and chemical resistance
	Test Method:	ASTM D 543 - Standard Practices for Evaluating the Resistance of Plastics to Chemical Reagents.
	Passing Criteria:	No staining or dissolution of the material.

C. Modular tactile surface pavers will **not** be cast integrally with platform precast concrete units but are to be mechanically fastened as per Article 2.03 of this specification section...

2.03 FASTENING SYSTEM

A. The fastener system shall consist of stainless steel screws anchored into plastic sleeves placed into predrilled holes in the pre-cast platform sections, meeting the following requirements:

1. Sleeve: Plastic sleeve shall be corrosion resistant and temperature resistant from -40 F to +104 F. The sleeves shall be installed in pre-drilled holes sized to the sleeve manufacturer's recommendation.

2. Screws: Supply stainless steel screws, oval head tamperproof, 1/4" diameter by 2 3/4" long, set in a high quality plastic sleeve. The head of the screw shall be powder coating finished to match the color of the paver or covered with a cap to match the paver finish. Screws shall be hammer driven to set into the sleeve and shall be removable with the use of a special tool for the tamperproof head.

3. Number: The number of fasteners used shall be as required to completely fasten the paver to the platform substrate, but in no case will less than 10 fasteners be installed in a 2' by 4' modular unit. Fasteners shall not be installed in the body of the tactile material.

PART 3 - EXECUTION

3.01 GENERAL

A. The work of this Section shall be performed by the manufacturer of the tactile pavers, or a manufacturer and Authority approved installer.

3.02 INSPECTION OF SURFACES

A. Carefully inspect substrates for conditions affecting application and performance of the work of this Section. Report defects in writing to Engineer. Do not proceed with tactile tile installation work until unsatisfactory conditions have been corrected.

B. Beginning work shall constitute acceptance of its conditions and any defects in tactile tile installation work resulting from such accepted surfaces shall be corrected without further expense to the Authority.

3.03 PREPARATION

A. Coordinate paver installation, working with prior and subsequent work of other trades.

B. Ensure that concrete substrate is smooth, clean, cured and trowel finished or scarified, free from curing compounds or surface coatings. The tactile paver shall be installed on poured in place, retractable edge units, or precast concrete units and **not** on leveling compounds or fillers.

C. The platform surface shall be scarified or depressed during forming, except for 2 foot wide platform edge units, and preparation shall depend on the thickness of the modular tile The surface preparation shall also be as recommended by the manufacturer for installation of that particular product so the body of the tile is to be recessed flush with the finished platform surface so that only the domes project above the top of the finished surface.

3.04 PAVER INSTALLATION

Install paver as shown on Contract Drawings, approved Shop Drawings, and in accordance with manufacturer's instructions and the following:

A. The pavers shall be dry-fit, approved by the engineer, prior to installation to ensure a first class installation.

B. Apply sealant only at expansion joints in accordance with Section 07920.

C. Fasteners, as required by the platform conditions, shall be used to fully fasten the paver to the platform to provide complete contact between the tile and the platform.

3.05 PROTECTION

A. During construction and prior to opening the platform edge for public use, cover all tactile surfaces with an appropriate covering material, temporarily secured in place, to protect it from damage from construction activity. Remove covering when protection is no longer needed and dispose of it off site in a manner conforming to all appropriate laws and regulations.

B. Prohibit all construction vehicle traffic from riding on newly paved surfaces. Do not place or store construction equipment or tools directly on paved surfaces.

PART 4 - MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

A. Modular Tactile Surfaces will be measured as per square foot complete in place, including all accessories and incidentals.

4.02 PAYMENT

A. Payment for modular tactile surfaces will be made at the Contract unit price for the quantities as specified above.

Item No.	Description	Unit
0932.300	Tactile Surface Paver	LF

END OF SECTION

SECTION 09900

PAINTING

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section specifies requirements for furnishing and application of field-applied paint as defined herein, including requirements for substrate surface preparation and related activities in accordance with the Standard Specifications Construction Section 09900, except as modified herein.

B. Related Work: The following items are not included in this Section and will be performed under the designated sections:
   1. Section 02577 – Pavement Marking
   2. Section 05500 – Miscellaneous Metal

C. Scope

   1. Provide all labor, materials, services, equipment and transportation required to complete all painting work as shown on the Drawings, as specified herein, or both.

   2. Surfaces to be painted include but are not limited to the following:
      a. Field Touch Up of shop prime and/or intermediate coats where damaged after installation.
      b. Field Painting of replacement shelter components including siding and trim.
      c. Field painting of existing sign frames.

   3. See Drawings for location of work not indicated herein.

   4. Contractor shall paint up to the nearest corner of all sides of the touch-up surface.

D. Surfaces not to be Painted or Finished

   1. It is not the intent to herein describe all items not to be painted, but merely to point out such items which could be misunderstood as painters finish work:
      a. Stainless steel shall not be painted unless noted otherwise on the Drawings or in these Specifications.

1.02 DEFINITIONS AND EXTENT

A. General: Standard coating terms defined in ASTM D 16 apply to this Section.

   1. Flat refers to a lusterless or matte finish with a gloss range below 15 when measured at an 85-degree meter
   2. Eggshell refers to low-sheen finish with a gloss range between 20 and 35 when measured at a 60-degree meter.
   3. Semigloss refers to medium-sheen finish with a gloss range between 35 and 70 when measured at a 60-degree meter.
   4. Full gloss refers to high-sheen finish with a gloss range more than 70 when measured at a 60-degree meter.

B. This Section includes surface preparation and field painting of exposed exterior and interior items and surfaces.

1. Surface preparation, priming, and finish coats specified in this Section are in addition to shop priming and surface treatment specified in other sections.

C. Paint exposed surfaces, except where these Specifications indicate that the surface or material is not to be painted or is to remain natural. If an item or a surface is not specifically mentioned, paint the item or surface the same as similar adjacent materials or surfaces. If a color of finish is not indicated, Engineer will select from standard colors and finishes available

1. Painting includes field painting of exposed bare and covered pipes and ducts (including color coding), hangers, exposed steel and iron supports, and surfaces of mechanical and electrical equipment that do not have a factory-applied final finish.

1.03 SUBMITTALS

A. Approval of Materials: As soon as practicable after award of the Contract and before purchasing materials for the work, the Contractor shall submit to the Engineer a complete list showing (1) the materials specified and (2) the equivalent materials proposed for use, including description of products if the Contractor desires to use materials other than those specified. This List (2) shall be accompanied by (a.) A certificate from an approved independent testing laboratory comparing proposed substitutes with the specified materials in all respects; (b.) Documented proof that the proposed substitute has proven record of performance when used in the intended application as confirmed by successful installation. (c.) Certification that products used as part of a system, are supplied by the same manufacturer so as to insure compatibility of materials and single manufacturer responsibility.

B. Codes: Painting work shall comply with all applicable codes and regulations and local interpretations thereof. The Contractor shall verify that all materials of this Section comply with said requirements. If any do not, he shall notify the Authority ten days prior to bid.

1.04 QUALITY ASSURANCE

A. Applicator Qualifications: A firm or individual experienced in applying paints and coatings similar in material, design, and extent to those indicated for=r this Project, whose work has resulted in applications with a record of successful in-service performance.

B. Source Limitations: Obtain block fillers and primers for each coating system from the same manufacturer as the finish coats.

C. Mockups: Provide a full-coat benchmark finish sample for each type of coating and substrate required. Comply with procedures specified in Painting and Decorating Contractors of America PDCA P5. Duplicate finish of approved sample Submittals.

1. Engineer will select one room or surface to represent surfaces and conditions for application of each type coating and substrate.

a. Wall Surfaces: Provide samples on at least 100 sq. ft.
b. Small Areas and Items: Engineer will designate items or areas required.

2. Apply benchmark samples, according to requirements for the completed Work, after permanent lighting and other environmental services have been activated. Provide required sheen, color and texture on each surface.

a. After finishes are accepted, Engineer will use the room or surface to evaluate coating systems of a similar nature.

3. Final approval of colors will be from benchmark samples.

1.05 DELIVERY, STORAGE AND HANDLING

A. No claim by the Contractor concerning the unsuitability of any material specified or his ability to produce first class work with same will be entertained after the Contract is signed.

1.06 PROJECT CONDITIONS

A. Apply waterborne paints only when the temperatures of surfaces to be painted and surrounding air are between 50 and 90 deg F.

B. Apply solvent-thinned paints only when temperatures of surfaces to be painted and surrounding air are between 45 and 95 deg F.

C. Do not apply paint in snow, rain, fog or mist; or when relative humidity exceeds 85 percent; or at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

D. Protection

1. The Contractor shall be responsible for the protection of adjacent surfaces to the areas being painted.

1.07 INSPECTION

A. Inspect and test paint surfaces to receive work of this Section and the conditions under which this work has to be performed.

B. Report in writing to the Engineer any condition which might adversely affect the performance of the paint work. Do not proceed with the work until defects have been corrected and conditions are satisfactory.

PART 2 - PRODUCTS

2.01 PAINT MATERIALS, GENERAL

A. Material Compatibility: Provide block fillers, primers, and finish-coat materials that are compatible with one another and with substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.

B. Material Quality: provide manufacturer's best-quality paint material of the various coating types that are factory formulated and recommended by manufacturer for application indicated. Paint-material containers not displaying manufacturer's product identification will not be acceptable.

1. Proprietary names: Use of manufacturer's proprietary product names to designate colors

or materials is not intended to imply that products named are required to be used to the exclusion of equivalent products of other manufacturers. Furnish manufacturer's material data and certificates of performance for proposed substitutions.

C. Manufacturers

All paints and finishes used for the project shall be of the type specified and shall be to the quality line of one of the following manufactures (except at noted otherwise below):

1. Incidental Work:
Sherwin Williams
Pittsburgh Paints (PPO)
ICI Devoe
Benjamin Moore
or approved equal

2. Metals (Galvanized)
Tnemec Co. Inc.
Dupont
ICI Devoe
or approved equal.

2.02 COLORS

A. Colors shall be selected by the Engineer to match the existing shelters to be rehabilitated.

B. Metal - MBTA Black

C. Platform Lettering - MBTA Yellow

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates, areas, and conditions, with Applicator present, for compliance with requirements for paint application.

1. Proceed with paint application only after unsatisfactory conditions have been corrected and surfaces receiving paint are thoroughly dry.
2. Start of painting will be construed as Applicator's acceptance of surfaces and conditions within a particular area.

B. Coordination of Work: Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.

1. Notify Engineer about anticipated problems when using the materials specified over substrates primed by others.

3.02 PREPARATION

A General: Remove hardware and hardware accessories, plates, machined surfaces, lighting fixtures, and similar items already installed that are not to be painted. If removal is impractical or impossible because of size or weight of the item, provide surface-applied protection before surface preparation and painting.

2. After completing painting operations in each space or area, reinstall items removed using workers skilled in the trades involved.

B Cleaning: Before applying paint or other surface treatments, clean substrates of substances that could impair bond of the various coatings. Remove oil and grease before cleaning.

3. Schedule cleaning and painting so dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.

C. Surface Preparation: Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition and as specified.

1. Provide barrier coats or tie-coats over incompatible primers or remove and re-prime.
2. Cementitious Materials: Prepare concrete, concrete unit masonry, cement plaster, and mineral-fiber-reinforced cement panel surfaces to be painted. Remove efflorescence, chalk, dust, dirt, grease, oils, and release agents. Roughen as required to remove glaze. If hardeners or sealers have been used to improve curing, use mechanical methods of surface preparation to remove.

   a. Use abrasive blast-cleaning methods if recommended by paint manufacturer.
   b. Determine pH of surfaces using pH indicating papers and distilled water and perform moisture vapor transmission testing for concrete floors in accordance with ASTM F 1869 and moisture tests on concrete walls in accordance with ASTM D 4263, Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method. For masonry walls, use a moisture meter approved by the coating manufacturer. Follow the selected and approved coating manufacturers recommendations for acceptable pH values, moisture vapor transmission values (in lbs. of moisture per 24 hours per 1,000 SF), and moisture meter values (for masonry). If these values are not acceptable, do not paint surfaces until moisture levels are acceptable or additional surface preparation has been performed and the pH values measured are acceptable
   c. Clean concrete floors to be painted with shot blast equipment.

3. Wood: Clean surfaces of dirt, oil, and other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sand surfaces exposed to view smooth and dust off.

   a. Scrape and clean small, dry, seasoned knots, and apply a thin coat of white shellac or other recommended knot sealer before applying primer. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood filler. Sand smooth when dried.
   b. Prime, stain, or seal wood to be painted immediately on delivery. Prime edges, ends, faces, undersides, and back sides of wood, including cabinets, counters, cases, and paneling.
   c. If transparent finish is required, backprime with spar varnish.
   d. Backprime paneling on interior partitions where masonry, plaster, or other wet wall construction occurs on back side.

e. Seal tops, bottoms, and cutouts of unprimed wood doors with a heavy coat of varnish or sealer immediately on delivery.

4. Ferrous Metals: Clean ungalvanized ferrous-metal surfaces that have not been shop coated; remove oil, grease, dirt, loose mill scale, and other foreign substances. Use solvent or mechanical cleaning methods that comply with The Society for Protective Coating's (SSPC) recommendations.

   a. Blast steel surfaces clean as recommended by paint system manufacturer and according to SSPC-SP 6/NACE No. 3, SSPC-SP 10/NACE No. 2, or SSPC-SP 12 Water Jetting at 45,000 psi as specified in the Paint Schedule in this Section.
   b. Treat bare and sandblasted or pickled clean metal with a metal treatment wash coat before priming.
   c. Treat existing painted surfaces with surface preparation methods recommended by coating manufacturer and in accordance with the coating schedule.

5. Galvanized Surfaces: Clean galvanized surfaces with nonpetroleum-based solvents so surface is free of oil and surface contaminants. Remove pretreatment from galvanized sheet metal fabricated from coil stock by mechanical methods. Use Oakite Cleaner LTS or equal for pretreatment of any non-primed galvanized metal before finish painting.

D. Material Preparation: Mix and prepare paint materials according to manufacturer's written instructions.

1. Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials and residue.
2. Stir material before application to produce a mixture of uniform density. Stir as required during application. Do not stir surface film into material. If necessary, remove surface film and strain material before using.
3. Use only thinners approved by paint manufacturer and only within recommended limits.

E. Tinting: Tint each undercoat a lighter shade to simplify identification of each coat when multiple coats of same material are applied. Tint undercoats to match the color of the finish coat, but provide sufficient differences in shade of undercoats to distinguish each separate coat.

3.03 APPLICATION

A General: Apply paint according to manufacturer's written instructions. Use applicators and techniques best suited for substrate and type of material being applied.

1. Paint colors, surface treatments, and finishes are indicated in the paint schedules.
2. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film.
3. Provide finish coats that are compatible with primers used.
4. The term "exposed surfaces" includes areas visible when permanent or built-in fixtures, grilles, convector covers, covers for finned-tube radiation, and similar components are in place. Extend coatings in these areas, as required, to maintain system integrity and provide desired protection.
5. Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces. Before final installation of equipment, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
6. Paint interior surfaces of ducts with a flat, nonspecular black paint where visible through registers or grilles.

7. Paint back sides of access panels and removable or hinged covers to match exposed surfaces.
8. Finish exterior doors on tops, bottoms, and side edges the same as exterior faces.
9. Sand lightly between each succeeding enamel or varnish coat.

B. Scheduling Painting: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.

1. The number of coats and film thickness required are the same regardless of application method. Do not apply succeeding coats until previous coat has cured as recommended by manufacturer. If sanding is required to produce a smooth, even surface according to manufacturer's written instructions, sand between applications.
2. Omit primer over metal surfaces that have been shop primed and touchup painted.
3. If undercoats, stains, or other conditions show through final coat of paint, apply additional coats until paint film is of uniform finish, color, and appearance. Give special attention to ensure that edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.
4. Allow sufficient time between successive coats to permit proper drying. Do not recoat surfaces until paint has dried to where it feels firm, and does not deform or feel sticky under moderate thumb pressure, and until application of another coat of paint does not cause undercoat to lift or lose adhesion.

C. Application Procedures: Apply paints and coatings by brush, roller, spray, or other applicators according to manufacturer's written instructions.

1. Brushes: Use brushes best suited for type of material applied. Use brush of appropriate size for surface or item being painted.
2. Rollers: Use rollers of carpet, velvet-back, or high-pile sheep's wool as recommended by manufacturer for material and texture required.
3. Spray Equipment: Use airless spray equipment with orifice size as recommended by manufacturer for material and texture required.

D. Minimum Coating Thickness: Apply paint materials no thinner than manufacturer's recommended spreading rate to achieve dry film thickness indicated. Provide total dry film thickness of the entire system as recommended by manufacturer.

E. Mechanical and Electrical Work: Painting of mechanical and electrical work is limited to items exposed in equipment rooms and occupied spaces.

F. Mechanical items to be painted include, but are not limited to, the following:

1. Uninsulated metal piping.
2. Uninsulated plastic piping.
3. Pipe hangers and supports.
4. Tanks that do not have factory-applied final finishes.
5. Visible portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets.
6. Duct, equipment, and pipe insulation having "all-service jacket" or other paintable jacket material.
7. Mechanical equipment that is indicated to have a factory-primed finish for field painting.

G. Electrical items to be painted include, but are not limited to, the following:

1. Switchgear.

2. Panelboards.
3. Electrical equipment that is indicated to have a factory-primed finish for field painting.

H. Block Fillers: Apply block fillers to concrete masonry block at a rate to ensure complete coverage with pores filled.

I. Prime Coats: Before applying finish coats, apply a prime coat, as recommended by manufacturer, to material that is required to be painted or finished and that has not been prime coated by others. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to ensure a finish coat with no burn-through or other defects due to insufficient sealing.

J. Pigmented (Opaque) Finishes: Completely cover surfaces as necessary to provide a smooth, opaque surface of uniform finish, color, appearance, and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable.

K. Transparent (Clear) Finishes: Use multiple coats to produce a glass-smooth surface film of even luster. Provide a finish free of laps, runs, cloudiness, color irregularity, brush marks, orange peel, nail holes, or other surface imperfections.

1. Provide satin finish for final coats.

L. Completed Work: Match approved samples for color, texture, and coverage. Remove, refinish, or repaint work not complying with requirements.

3.04 CLEANING

A. Cleanup: At the end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from Project site.

1. After completing painting, clean glass and paint-spattered surfaces. Remove spattered paint by washing and scraping without scratching or damaging adjacent finished surfaces.

3.05 PROTECTION

A. Protect work of other trades, whether being painted or not, against damage from painting. Correct damage by cleaning, repairing or replacing, and repainting, as approved by Engineer.

B. Provide "Wet Paint" signs to protect newly painted finishes. After completing painting operations, remove temporary protective wrappings provided by others to protect their work.

1. After work of other trades is complete, touch up and restore damaged or defaced painted surfaces. Comply with procedures specified in Painting and Decorating Contractors of America PDCA P1.

3.06 PAINT SCHEDULE

A. Schedule: Provide products and number of coats specified. Use of manufacturer's proprietary product names to designate colors, materials, generic class, standard of quality and performance criteria and is

not intended to imply that products named are required to be used to the exclusion of equivalent performing products of other manufacturers.

B. Exterior Paint Schedule:

1. Exterior Masonry and Concrete to be Painted (where indicated):

One Coat	1.	Tnemec Series 156 Enviro-Crete at 6.0 to 10 mils DFT
	2.	Liquid Plastics Acrylic at 8.0 to 10.0 mils DFT
	3.	Dupont Tufcryl at 8.0 to 10.0 mils DFT
	4.	Amercoat Series 147 at 3.0 to 6.0 mils DFT
One Coat	1.	Tnemec Series 156 Enviro-Crete at 8 to 10 mils DFT
	2.	Liquid Plastics Acrylic at 8.0 to 10.0 mils DFT
	3.	Dupont Tufcryl at 8.0 to 10.0 mils DFT
	4.	Amercoat Series 147 at 3.0 to 6.0 mils DFT

2. Exterior Masonry and Concrete to be Stained (where indicated):

One Coat	1.	Chemprobe Prima-pel H20 100 to 125 sq/gal
One Coat	1.	Chemprobe Conformal Stain WB 100 to 110 sq/gal

3. Exterior Plaster, Glazed Brick, Previous Painted Masonry and Previous Painted Concrete (where indicated):

One Coat	1.	Series 151-1051 Elasto-Grip at 2.0 to 3.0 mils DFT.
	2.	Liquid Plastics Water Borne Penetrating Primer at 3.0 mils DFT
	3.	Amercoat Series 220 at 3.0 to 6.0 mils DFT
Two Coats	1.	Series 156 Enviro-Crete at 8 to 10 mils DFT
	2.	Liquid Plastics Decadex at 10.0-12.0 mils DFT
	3.	Amercoat Series 220 at 3.0 to 6.0 mils DFT

4. Exterior Ferrous Metal, Urethane System:
(Surface Preparation: SSPC-SP6)

One Coat	1.	Tnemec Series 90-1K97 at 3 mils DFT; shop applied under other Sections; use for touch up
	2.	Ameron Series 68 at 3 mils DFT; shop applied under other Sections; use for touch up
	3.	Dupont Urethane Ganicin Zinc Rich Primer 80%zinc load at 3.0 mils DFT
One Coat	1.	Tnemec Series N69 Hi-Build Epoxoline II at 3.0 mils DFT
	2.	Ameron Amerlock 400 Hi-Build Epoxy at 3.0 to 5.0 mils DFT.
	3.	Dupont 25P High Solids Epoxy at 4.0 –6.0 mils DFT
One Coat	1.	Tnemec Series V73 Endura-Shield at 3.0 mils DFT
	2.	Ameron Amerlock 450H Polyurethane Topcoat at 3.0 mils DFT
	3.	Dupont High Solids Imron Urethane at 4.0 mils DFT

5. Exterior Ferrous Metal, Fluoropolymer System:
(Surface Preparation: SSPC-SP6)

One Coat	1.	Tnemec Series 90-1K97 at 3.0 mils DFT; use for touch up
	2.	Dupont Ganicin Urethane Zinc Rich at 3.0 mils DFT
One Coat	1.	Tnemec Series V73 Endura-Shield at 3.0 mils DFT
	2.	DuPont Imron HS at 3.0 mils DFT
One Coat	1.	Tnemec Series 1070 Fluoronar at 2.0 mils DFT with [1078 metallic] [1071 satin] [1072 semi-gloss] finish
	2.	Dupont Fluoropolymer at 3.0 mils DFT

6. Exterior Ferrous Metal, Engineered Siloxane/ Polyester Urethane System:
(Surface Preparation: SSPC-SP6)

One Coat	1.	Tnemec 901K97 at 3.0 mils DFT
	2.	Ameron Series 68HS at 3.0 mils DFT
	3.	Dupont Urethane Zinc Rich Primer 80% zinc load at 3.0 mils DFT
One Coat	1.	Tnemec V27 Typoxy at 3.0- 4.0 mils DFT
	2.	Ameron Amerlock 400 High Build Epoxy at 3.0 mils DFT
	3.	Dupont 25P High Solids Epoxy at 4.o mils DFT
One Coat	1.	Tnemec 290/291 Endurashield at 2.0-3.0 mils DFT
	2.	Ameron PSX-700 Engineered Siloxane Topcoat at 5.0 mils DFT
	3.	Dupont Imron High Solids Polyester Urethane at 3.0 mils DFT

7. Exterior Non-Ferrous Metal (except aluminum):
(Surface Preparation: Sand with 60 grit scotch brite pads followed by SSPC-SP1)

One Coat	1.	Tnemec Series N69 Hi-Build Epoxoline II at 3.0 mils DFT.
	2.	Ameron 400 Amerlock at 4.0 to 5.0 mils DFT
	3.	Dupont 25P High Solids at 5.0 mils DFT
One Coat	1.	Tnemec Series V73 Endurashield at 3.0 mils DFT
	2.	Ameron Amercoat 450H Polyurethane at 3.0 mils DFT
	3.	Dupont High Solids Imron at 4.0 mils DFT

8. Exterior Galvanized Metal (not shop-finished under Sections 05100 or 05500):
(Surface Preparation: SSPC-SP7 Brush-off Blast)

One Coat	1.	Tnemec Series V27 Typoxy at 3.0 mils DFT
	2.	Ameron Amerlock 400 Hi-Build Epoxy at43.0 mils DFT
	3.	Dupont 25P High Solids at 4.0 mils DFT
One Coat	1.	Tnemec Series V73 Endura-Shield at 3.0 mils DFT
	2.	Ameron Amercoat 450H Polyurethane at 3.0 mils DFT
	3.	Dupont Imron 2.8 Urethane at 3.0 to 4.0 mils DFT

9. Exterior Aluminum (Where Required):
(Surface Preparation: Pressure Wash with Oakite and sanding with Scotch Bright pads)

One Coat
1. Tnemec Series V27 Typoxy at 2.0 mils DFT
2. Ameron Amerlock 400 Hi-Build Epoxy at 2.0 to 3.0 mils DFT
3. Dupont 25P High solids at 4.0 mils DFT

One Coat
1. Tnemec Series V73 Endura-Shield at 2.0 mils DFT
2. Ameron Amercoat 450H polyurethane at 3.0 mils DFT
3. Dupont High Solids Imron 2.8 at 4.0 mils DFT

10. Concrete in Immersion:
(Surface Preparation- SSPC-SP7 Brush Blast Clean)

One Coat
1. Tnemec 446 Permathane at 7.0 to 9.0 mils DFT
2. Ameron Amerlock 400 at 6.0-8.0 mils DFT
3. Dupont Moisture Cured Urethane at 10-12 mils DFT

One Coat
1. Tnemec 446 Permathane at 7.0 to .09 mils DFT
2. Ameron Amerlock 400 at 6.0 to 8.0 mils DFT
3. Dupont Moisture Cured Urethane at 10.0 to 12.0 mils DFT

11. Steel Piles in Immersion:
(Surface Preparation- SSPC-SP10 Near White Metal Blast Clean)

One Coat
1. Tnemec Series 9097 or Series 90-1K97 at 3.0 mils DFT
2. Ameron Series 68 HS Zinc 3.0 mils DFT
3. Dupont Urethane Zinc Rich NSF Grade primer at 4.0 –5.0 mils DFT

Two Coats
1. Tnemec 446 Permathane at 7.0 to 9.0 mils DFT
2. Ameron Amerlock 400 with glass flake at 10.0-12.0 mils DFT
3. Dupont Moisture Cured Urethane at 10.0 DFT

12. Existing Exterior Painted Steel for Sandblasting and Finish:
(Surface Preparation- SSPC-SP 10 Near White Metal Blast)

One Coat
1. Tnemec 90-97 or 901K97 at 3 to 3.5 mils DFT
2. Ameron Series 68 HS at 3.0 mils DFT
3. Dupont Ganicin 80% Zinc load Zinc Rich Primer at 3.0 to 3.5 mils DFT

One Coat
1. Tnemec V73 Endurashield at 3.0 to 4.0 mils DFT
2. Ameron Amerlock 400 at 4.0 DFT
3. Dupont Imron 2.8 at 4.0-5.0 mils DFT

One Coat
1. Tnemec 1070 Fluoronar at 2.5 to 3.5 mils DFT
2. Ameron PSX-700 Coating at 5.0 mils DFT
3. Dupont Fluoropolymer at 3.0 mils DFT

13. Existing Exterior Painted Steel for Overcoat Finish:
(Surface Preparation : Water Blast 5000 psi/ SSPC-SP3 Power Tool Clean)

One Coat
1. Tnemec 394 Omnithane at 2.5 to 3.0 mils DFT
2. Ameron Amerlock 400 Hi-Build Epoxy at 3.0 to 4.0 mils DFT
3. Dupont 25P at 4.0 mils DFT

One Coat
1. Tnemec V27 Typoxy at 3.0 to 5.0 mils DFT
2. Ameron Amerlock 400 at 3.0 to 4.0 mils DFT
3. Dupont 25P at 4.0 mils DFT

One Coat
1. Tnemec V73 Endurashield at 3.0 to 5.0 mils DFT
2. Ameron Amercoat 450H at 3.0 mils DFT
3. Dupont 2.8 Imron at 4.0 to 6.0 mils DFT

C. Interior Paint Schedule for Standard Performance Coatings:

1. Interior Gypsum Wallboard and Plaster for Latex Eggshell Finish:

One Coat
1. Moore Ecospec Interior Latex Primer Sealer (231)
2. Duron Genesis Latex Primer
3. S-W Health Spec Latex Wall Primer
4. PPG Pure Performance Latex Primer

Two Coats
1. Moore Pristine Ecospec Interior Latex Eggshell (223)
2. Duron Genesis Latex Eggshell
3. S-W Health Spec Latex Eggshell
4. PPG Pure Performance Latex Eggshell

2. Interior Gypsum Wallboard and Plaster Ceilings for Latex Flat Finish:

One Coat
1. Moore Ecospec Interior Latex Primer Sealer (231)
2. Duron Genesis Latex Primer
3. S-W Health Spec Latex Wall Primer
4. PPG Pure Performance Latex Primer

Two Coats
1. Moore Pristine Ecospec Interior Latex Flat (219)
2. Duron Genesis Latex Flat
3. S-W Health Spec Latex Flat
4. PPG Pure Performance Latex Eggshell

3. Interior Gypsum Wallboard and Plaster for Latex Semi-Gloss Finish:

One Coat
1. Moore Ecospec Interior Latex Primer Sealer (231)
2. Duron Genesis Latex Primer
3. S-W Health Spec Latex Wall Primer
4. PPG Pure Performance Latex Primer

Two Coats
1. Moore Pristine Ecospec Interior Latex Semi-Gloss (224)
2. Duron Genesis Latex Semi-Gloss
3. S-W Health Spec Latex Semi-Gloss
4. PPG Pure Performance Latex Semi-Gloss

4. Interior Architectural Woodwork, Finish Carpentry, and Wood Doors for Latex Semi-Gloss Paint Finish (softwoods, paint grade hardwoods, MDO, and hardwood veneers):

One Coat
1. Moore Ecospec Interior Latex Primer Sealer (231)

2. Duron Genesis Latex Primer
3. S-W Health Spec Latex Primer
4. PPG Pure Performance Latex Primer

Two Coats
1. Moore Pristine Ecospec Interior Latex Semi-Gloss (224)
2. Duron Genesis Latex Semi-Gloss
3. S-W Health Spec Latex Semi-Gloss
4. PPG Pure Performance Latex Semi-Gloss

5. Interior Architectural Woodwork, Finish Carpentry and Millwork for Satin Transparent Finish (all hardwoods and hardwood veneers, except paint grade and factory-finished items):

Sand — 120 grit sandpaper
Sand — 220 grit sandpaper

One Coat Stain
1. Carver Tripp Waterbase Stain
2. Knute's Restoration EF Waterbase Stain
3. American Formulating & Manuf., SafeCoat Durostain

Two Coats
1. Bona Kemi USA, Bona Tech Mega Waterbase Polyurethane
2. Target Coatings, Oxford Hybrid Satin Varnish
3. American Formulating & Manuf., Polyureseal BP

Sand Between Urethane Coats — 220 grit sandpaper

6. Interior Concrete Masonry Units for Latex Semi-Gloss Finish in Dry Areas:

One Coat
1. PPG Speedhide Int/Ext Latex Block Filler (28g/l VOC formulation.)

Two Coats
1. PPG Pure Performance Latex Semi-Gloss

D. Interior Paint Schedule for High Performance Coatings:

1. Interior Concrete Ceiling Surfaces for Acrylic - Semi-Gloss Finish in Dry Areas:

One Coat
1. Tnemec Series 151 Elasto-grip at 2.0 mils DFT
2. Ameron Amerlock Sealer at 1.0 mils DFT
3. Dupont High Solids Acrylic Primer 2.0 mils DFT

Two Coats
1. Tnemec 28/29 Tufcryl at 2.0 –3.0 mils DFT per coat min.
1. Ameron Ameron Amercoat 220 at 3.0 mils DFT
2. Dupont High Solids Acrylic at 3.0 mils DFT

2. Interior Concrete Block, Epoxy Coating:
(Surface Preparation: Cured, clean and dry, free of surface contaminants)

One Coat
1. Tnemec 130 Envirofil at 100 sq/ft/gal
2. Ameron Amercoat 147 at 100 sq/ft/gal
3. Dupont 25P at 100 sq/ft/gal

One Coat
1. Tnemec 280 Tneme- glaze at 6.0 8.0 mils DFT
2. Ameron Ameron Amercoat 351 6.0-8.0 mils DFT
3. Dupont 100% Solids Epoxy at 7.0 to 9.0 mils DFT

One Coat:
1. Tnemec 1080 Endurashield at 3.0 – 4.0 mils DFT
2. Ameron Amercoat 335 at 3.0 to 4.0 mils DFT
3. Dupont Imron WB Urethane at 3.0 to 4.0 mils DFT

3. Interior Concrete Walls Exposed to View, Urethane Coating:
(Surface Preparation: Cured , clean and dry, free of surface contaminants)

One Coat
1. Tnemec 201 Epoxoprime at 3.0- 4.0 mils DFT
2. Ameron Amerlock Sealer 1.0-1.5 mils DFT
3. Dupont Hi-Solids Colar primer at 3.0 –4.0 mils DFT

One Coat
1. Tnemec 280 Tneme-glaze at 6.0 to 8.0 mils DFT
2. Ameron Amercoat 351 Epoxy at 6.0 to 8.0 mils DFT
3. Dupont 100 % Solids Epoxy at 8.0-10.0 mils

One Coat
1. Tnemec 297 Enviroshield WB at 3.0 to 3.5 mils DFT
2. Ameron Amercoat 335 at 2.0 to 3.0 mils DFT
3. Dupont WB Urethane at 3.5 to 4.0 mils DFT

4. Interior Concrete Walls Exposed to View, Epoxy Coating for Non-Immersion Service:
(Surface preparation- Cured , clean ,dry and free of contaminants)

One Coat
1. Tnemec 201 Epoxoprime at 2.0-3 mils DFT
2. Ameron Amerlock Sealer at 1.0-1.5 mils DFT
3. Dupont 25P Epoxy at 6.0 –8.0 mils DFT

One Coat
1. Tnemec 280 Tneme-glaze at 6.0 to 8.0 mils DFT
2. Ameron Amercoat 351 6.0 to8.0 mils DFT
3. Dupont 100% Solids Epoxy at 8.0 –10.mils DFT

One Coat
1. Tnemec 1080 Endurashield 2.0 to 3 mils DFT
2. Ameron Amercoat 335 at 2.0 to 3.0 mils DFT
3. Dupont WB Urethane at 3.0 to 4.0 mils DFT

5. Concrete Ceiling Coating –New or Previously Painted or Acoustical Plaster
(Surface Preparation- Cured Clean and Dry)

One Coat
1. Tnemec 151 Elasto-grip at 2.0 mils DFT

One Coat
1. Tnemec 158 Biolastic at 8.0 mils DFT

One Coat
1. Tnemec 158 Biolastic at 8.0 mils DFT

6. Interior Metals, Epoxy (Not specified to receive other coating systems/not shop finished):

One Coat
1. Approved primer, in shop under other Sections (where specified). If not shop primed, provide primer recommended by finish coating manufacturer

One Coat
1. Tnemec V27 Typoxy at 2.0 mils DFT
2. Ameron Amerlock 400 at 2.0 to 4.0 mils DFT
3. Dupont 25P at 3.0 to 4.0 mils DFT

One Coat
1. Tnemec 29 Tufcryl at 2.0 to 3.0 mils DFT
2. Ameron Amerlock 400 at 2.0 to 4.0 mils DFT
3. Dupont High Solids Acrylic Coating 3.0 mils DFT

7. Interior Exposed Steel, Joists, Ductwork, Conduit and Similar Items (where indicated):

One Coat
1. Tnemec Series 115 WB Unibond or Series 15 Unibond at 2.5 to 3 mils DFT
2. Ameron Amercoat 220 Acrylic Series at 3.0 mils DFT

8. Mechanical Room Floor, Epoxy System:

One Coat
1. Tnemec Series 201/203 Epoxoprime at 4.0 to 6.0 mils DFT
2. Ameron Amerlock Seal at 1.0 to 1.5 mils DFT

One Coat
1. Tnemec Series 206 Flexible Epoxy Underlayment at 50 to 80 mils DFT
2. Ameron NU-Klad 126 at 30 to 40 mils DFT

One Coat
1. Tnemec Series 297 at 3 mils DFT
2. Ameron PSX-700 Series at 3.0 to 5.0 mils DFT

9. Exposed Concrete Floor Sealer:

One Coat
1. Ashford Formula by Curecrete Chemical
2. Chem Probe CT Denisifyer
3. Degussa R41 Sealer
4. Ameron NU-Klad 126 or Amerlock Sear at 1.0 to 1.5 mils DFT

10. Mechanical and Electrical Work (Paint all exposed items throughout the project except factory finished items with factory-applied baked enamel finishes which occur in mechanical rooms or areas, and excepting chrome or nickel plating, stainless steel, and aluminum other than mill finished. Paint all exposed ductwork and inner portion of all ductwork: Same as specified for other interior metals, hereinabove.

3.07 SURFACE PREPARATION

A. Perform preparation and cleaning procedures in strict accordance with the paint manufacturer's instructions and as herein specified. Use metal scrapers, hand wire-brushes, hand-sanding blocks, belt or pad sanders only to remove loose paint and feather edges. Do not use open flames, or power tools other than belt or pad sanders. Do not use disc sanders. Do not use any abrasive blasting or non-abrasive blasting methods.

B. Protection of adjoining surfaces: Remove or protect machined surfaces, plates, roofing and

similar items not to be painted.

C. Clean surfaces to be painted before applying paint or surface treatment. Remove oil and grease prior to mechanical cleaning. Program the cleaning and painting so that contaminants from the leaning process will not fall onto wet, newly-painted surfaces.

3.08 FIELD QUALITY CONTROL

A. Materials Preparation

1. Mix and prepare painting materials in accordance with manufacturer's directions.

2. Store materials not in actual use in tightly covered containers. Maintain containers used in storage, mixing, and application of paint in a clean condition, free of foreign materials and residue.

3. Stir materials before application to produce a mixture of uniform density, and stir as required during the application of the materials.

3.09 APPLICATION

A. Apply paint materials in accordance with the manufacturer's directions. Use brushes and techniques best suited for the type of material being applied. Do not use any type of spraying or rolling device to apply paint. All paint must be brush applied.

B. Apply paint material so as to completely cover all surfaces with an opaque, smooth surface of uniform finish, color, appearance and coverage. cloudiness, spotting, laps, brush marks, runs, sags, ropiness or other surface imperfections will not be acceptable. Remove, refinish, or repaint work not in compliance with specified requirements.
1. Contractor shall paint up to the nearest corner of all sides of the touch-up surface.

3.10 CLEAN-UP AND PROTECTION

A. During the progress of the work, remove from the project daily all discarded paint materials, rubbish, cans, and rags. No paint materials will be allowed to be kept within the structure itself for any reason.

B. Protect surrounding concrete with 4 mil sheet plastic or 1/4" plywood kept in place during painting.

C. Protect work of other trades, whether to be painted or not, against damage by painting and finishing work. Correct any damages by cleaning, repair or replacing and repainting, as directed by the Engineer.

D. Provide "Wet Paint" signs, as required to protect newly-painted finishes.

E. Upon completion of painting work, clean all window glass and other paint-spattered surfaces. Remove spattered paint by proper methods of washing and scraping, using care not to scratch or otherwise damage finished surfaces.

PART 4 - MEASUREMENT AND PAYMENT

4.01 GENERAL

Separate measurement and payment will not be made for Painting complete in place but all costs in connection therefore shall be included in the item of work to which Painting pertains.

END OF SECTION

SECTION 09910

SHOP PAINTING OF HOT-DIP GALVANIZED STEEL

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section specifies the shop painting of hot-dip galvanized steel.

B. This Section specifies substrate surface preparation and shop applied prime paint systems for structural steel and miscellaneous steel elements which have been hot dip galvanized and will be exposed to view.

C. Definition: Paint shall be defined as liquid coating applied to the substrate surface by means of conventional air spray, airless spray, brush, or roller which dries or cures to a hard surface, and includes the words paint, primer, coating, and words of similar import.

D. Scope

1. Provide all labor, materials, services, equipment and transportation required to complete all painting work as shown on the Drawing, as specified herein, or both.

2. Surfaces to be painted include but are not limited to the following:
   a. Touch up paint.
   b. Sign frames, posts, and brackets.
   c. Miscellaneous metals unless otherwise noted.

3. See Drawings for location of work not indicated herein.

E. Related Work: Related requirements are included in, but not limited to, the following Sections.

1. Section 05041 - HOT-DIP GALVANIZING

2. Section 05500 - MISCELLANEOUS METALS

3. Section 09900 - PAINTING

1.03 QUALITY CONTROL

A. Requirements of Regulatory Agencies: Provide and apply materials complying with environmental requirements of authority having jurisdiction.

B. Pre-Construction Conference: A site meeting shall be held with representatives of the General Contractor, Engineer, Galvanizer, Fabricator, Painter, and others whose installed work is specified to be coated under this Section to discuss conditions, responsibilities, application and inspection procedures and specification requirements.

C. Tolerances:

1. Thickness: Apply coating of specified dry film thickness (DFT) where thickness shall be absolute minimum coverage at any point of measurement as determined by the paint

manufacturer.

D. Mock-Up Surfaces or Areas: A six foot sample fence section shall be designated as control for color, texture, and application for the specified paint system. This item, once accepted, shall be used as criteria for acceptance for similar items, which shall match accepted mock-up. Mock-up location to be determined by the Engineer.

E. Certificates:

1. Provide certificates listing materials fused in coating system and certify compliance with standards designated.

2. Provide certificates stating that materials provided comply with requirements of this Section.

F. Inspection: Prior to commencement of this contract the galvanizer or fabricator shall demonstrate to the satisfaction of the Authority's inspection forces, their capability of fully complying with the intent of these specifications.

1.04 SUBMITTALS

A. Submit the following in accordance with SUBMITTALS, Section 01300.

C. Certificates: Submit notarized certificates complying with requirements of this Section.

1.05 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver paint materials with label or product data sheet affixed to the manufacturer's containers showing manufacturer's name, type of paint, stock number , batch number, label analysis of solids and vehicles, thinning instructions, drying and recoat time, application instructions with recommended methods, environmental restrictions, and MSDS sheets.

B. Remove permanently from premises containers without labels or illegibly defaced labels.

C. Store paint materials in an accepted location reserved only for such materials and related equipment in compliance with applicable health and fire regulations of authorities having jurisdiction.

D. Any containers showing damage to the extent that spillage of contents is visible shall be rejected and removed permanently from the site.

1.06 APPLICATION CONDITIONS

A. Environmental Requirements:

1. Apply all intermediate and finish coatings under conditions within the following tolerances:
   a. Air Temperature: Min. 50 deg. F to max. 90 deg. F.
   b. Surface Temperature: Min. 50 deg. F. to max. 100 deg. F.
   c. Relative Humidity: Max. 65 percent.

2. Maintain surface dry and free from dust, dirt, oil, grease, or other contaminants.

3. Keep environment free of airborne dust and dirt until paint is dry.

4. To ensure compliance with this Specification, monitor all temperature and humidity levels continuously with a recording hydrothermograph with printed record available for review by Authority at any time during the Project.

5. Comply with all applicable federal, state, local, OSHA, EPA, and fire regulations for both spray and curing facilities.

6. Provide spray booth with a filtered exhaust.

7. Cure booth may be heated to accelerate paint dry time at applicators option, however strictly comply with paint manufacturer's instructions. Temperature shall not exceed 150 degrees F. Use an indirect thermostat controlled gas-fired, forced hot-air blower; do not use infra-red type curing equipment.

8. Protect spray and curing booth with sprinkler system complying with NFPA 15.

9. Continuously monitor air in curing booth by a lower explosive limit (LEL) monitoring device connected to the ventilation system.

PART 2 - PRODUCT

2.01 GENERAL

A. Provide thinners, driers, and other products, manufactured, furnished, or approved by accepted manufacturers for use with their product.

B. Handle, store, mix, and apply paint materials, primers, and metal conditioners in accordance with recommendations of accepted manufacturers.

C. Should it appear that conflicts exist between such recommendations and the Specifications, obtain written clarification before proceeding with the Work.

2.02 COLORS

A. Colors shall be as shown on the plans or from the supplier's full range of custom colors, as selected by the Engineer after award of the Contract, as specified in this Section.

B. Provide finish coat color from the suppliers full range of custom colors matching accepted color sample within industry tolerances and identified as specified.

2.03 PAINT MATERIALS

A. Intermediate Epoxy and Color Coating of Galvanized Steel Members:

1. Scope of Work:
   a. Structural steel and miscellaneous metal items Specified herein that shall have epoxy intermediate coating and shall include ornamental fences, steel signage frames, steel members, and other galvanized miscellaneous items noted on drawings to be painted.

2. All steel that has been hot-dip galvanized after fabrication and is specified to be painted, shall receive a shop applied intermediate epoxy coat.

B. Paint Systems:

PAINT SYSTEM REQUIRED	DESCRIPTION	APPLICATION RATE (DFT)
Factory coated with intermediate epoxy with field applied top coat	Polyamide Epoxy 58± 2% solids by volume VOC 3.41 pigmented cure time 3 hours to recoat at 75 deg. F.	3 mils
Factory coated with intermediate epoxy with factory applied top coat	Polyamide Epoxy 58± 2% solids by volume VOC 3.41 pigmented cure time 3 hours to recoat at 75 deg. F.	2.5 mils

PART 3- GENERAL

3.01 SURFACE PREPARATION

A. Prepare surfaces for painting in accordance with the following requirements and applicable standards, as scheduled herein.

1. Hot-dip galvanize in accordance with Section 05041.

3.02 INSPECTION

A. Examine material upon which work specified in this Section is dependent for defects which may influence application or installation and performance.

B. Do not place work in this Section upon previously placed incomplete, unsound, or defective work.

3.03 PAINT SCHEDULE

A. Apply coating materials to follow surfaces as scheduled in Section 05041 and as noted on Drawings.

COATING SYSTEM	THICKNESS(DFT)	LOCATION OR ITEM
Galvanize in accordance with Section 05041	3 to 4 mils	for all exposed structural steel, misc. metal and iron exposed to the weather, moisture, or other corrosive conditions
Factory coated with intermediate epoxy for field applied top coat	3 mils min.	

3.04 APPLICATION

A. Coating materials (other than hot-dip galvanizing) may be applied by the galvanizer in strict conformance to environmental requirements set forth in Article 1.06 above or in facilities approved in advance by the MBTA.

B. Application: Between galvanizing and application of coating materials specified herein, apply coating in min. 0 hours to max. 12 hours after galvanizing has been applied. Top coatings shall be applied over intermediate epoxy coat in strict compliance with manufacturer's written recommendations.

3.05 FIELD QUALITY CONTROL

A. Inspection:

1. Measure representative areas for DFT.

2. If thickness of coating does not comply with DFT requirements, apply additional applications of coating to attain specified DFT at no additional cost to the Authority.

3. Where characteristics of coating prohibit recoating, remove and replace unacceptable coating.

4. Where application of coating exceeds DFT and is considered detrimental to quality of Project, remove and recoat to specified DFT at no additional cost to the Authority.

5. Where measurement of DFT is impractical or impossible, determine the amount of coating necessary from manufacturer's published spreading rate calculated to specified DFT.

6. The manufacturer's stock and batch number will be compared with the assigned Paint Identification Number with the color sample submitted for finished surfaces, and with mock-up for finished surfaces in accordance with requirements of this Section.

3.06 FIELD REPAIR PROCEDURES

A. Where factory applied coatings have become damaged or abraded due to handling, transport, installation, welding or other circumstances, they shall be repaired by the field painting crew or miscellaneous metal contractor.

1. All damaged areas shall be thoroughly wire brushed. All dirt, oil, grease or other contaminants shall be removed. Touch-up paint supplied by the galvanizer or steel fabricator, identical in color and composition to that used in the plant, shall be applied to all prepared surfaces to a dry film thickness of at least 3.0 mils. Field touch-up shall be done within twenty four hours of installation.

PART 4 - MEASUREMENT AND PAYMENT

4.01 GENERAL

A. No separate measurement or payment will be made for the work required under this Section. All costs in connection therewith will be considered incidental to the items of work to which they pertain.

END OF SECTION

SECTION 10400

FIBERGLASS SIGNS

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section specifies furnishing and installing fiberglass station signage including steel frames, concrete foundations, fasteners, excavation, backfill and incidentals required for the complete installation of the work as indicated on the Contract Drawings and as specified herein.

B. Coordinate all work with other trades and field check conditions prior to installation of all items. Field measure and verify existing conditions for all signs prior to fabrication.

C. This Section specifies removing and resetting station signage including repainting steel frames, providing concrete foundations fasteners, excavation, backfill and incidentals required for the complete installation of the work as indicated on the contract drawings and as specified herein.

D. Related Work are included in, but not limited to, the following Sections.

1. Section 02200: EARTHWORK

2. Section 03300: CAST-IN-PLACE CONCRETE

3. Section 05500: MISCELLANEOUS METALS

4. Section 10426: TACTILE SIGNS

1.02 QUALITY CONTROL

A. Reference Standard: Massachusetts Bay Transportation Authority, Guidelines and Standards, Part V. Graphics, Revised Fall 1990 with 1995 Supplement.

B. Compliance with Tests: Provide sign panels when specified which comply with tests of American Society of Testing Materials (ASTM), Military Specifications (Mil Spec), Military Standards (Mil Std), and Federal Test Method listed elsewhere in this specification.

C. Sign Fabricator Qualifications: Firm experienced in producing signs similar to those indicated for this Project, with a record of successful in-service performance, and sufficient production capacity to produce sign units required without causing delay in the Work. Firms must demonstrate at least five (5) years experience in performing the kind of sign work indicated.

E. Single-Source Responsibility: For each separate sign type required, obtain signs from one source of a single manufacturer.

F. Design Concept: The Drawings indicate sizes, profiles, and dimensional requirements of signs and are based on the specific types and models indicated. Sign units by other manufacturers may be considered provided deviations in dimensions and profiles do not change the design concept as judged by the Engineer. The burden of proof of equality is on the proposer.

G. Warranties: Provide ten year warranty for fading, chipping, peeling, and weathering for fiberglass reinforced resin embedment signs.

H. Sign materials, graphics and installation shall strictly comply with the applicable requirements of all local, municipal, state, federal or other agencies whose codes, laws, rules, ordinances and regulations have jurisdiction over such work.

1.03 SUBMITTALS

A. Submit in accordance with SUBMITTALS, Section 01300, except as modified herein.

B. Product Data: Submit manufacturer's technical data and installation instructions for each type of sign required.

C. Shop drawings showing fabrication and erection of all signs. Include plans, elevations, and large-scale sections of typical members and other components. Show anchor bolts, base plates, grounds, layout, concrete footing reinforcement, accessories, and installation details.

1. Furnish full-size camera ready graphic samples for individually mounted signs.

D. Samples: Provide the following samples of each sign component for initial selection of color, pattern and surface texture as required and for verification of compliance with requirements indicated. Fiberglass signs: Sample of a typical sign, material measuring 8"x 8", stiffeners, and mounting frame. Include product data on the proposed mounting anchor.

1.04 OWNER SUPPLIED ARTWORK

A. The MBTA will supply full-size, camera ready artwork for one prototype sign. The graphics and text required on all other signs are included in the Drawings. The MBTA will provide full size camera ready artwork for the RAPID TRANSIT LINE MAP (RTL) and GREEN LINE LIST OF STATIONS.

1.05 CONTRACTOR SUPPLIED ARTWORK

A. The Contractor will prepare full-size, camera ready artwork for the rest of the signs based on the list of signs and text and the prototype sign furnished in the Drawings.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:

1. Manufacturers of Fiberglass Signs:

a. ASI Sign Systems, Inc.
b. Pannier Graphics
c. APCO
d. Diskey Sign Company
e. Charlestown Industries
f. Or approved equal.

2. Manufacturers of Steel Panels for single-sided signs:

   a. Unerectors, Inc., Dorchester, MA
   b. ASI-Modulex, Dallas, TX
   c. Best Sign Systems, Montrose, CO
   d. or approved equal.

3. Manufacturers of caulking and sealants:

   a. DAP Products, Inc.
   b. PAZ Systems, Inc.
   c. 3M Corporation.
   d. or approved equal.

4. Manufacturers of concrete and masonry anchors:
   a Hilti Corporation
   b. The Rawlplug Co.
   c. U.S. Anchor Corp.
   d. or approved equal.

2.02 MATERIALS

A. Fiberglass Sign Panels:

1. Sign panels shall have a thickness of 1/4 inch with 3/4 inch aluminum perimeter channel and stiffeners as per Drawings. Channel will be bonded to the back with adhesive suitable for joining aluminum and fiberglass.

2. All copy and graphics will be totally embedded with smooth surfaces on both sides. Glass fibers will not be readily discernible on the face.

3. The composition will consist of all white glass and R-70 resin so that when they are combined the color index of refraction assures total clarity of all color, copy and graphics. They will have a temperature range of -65 to 350 degrees Fahrenheit.

4. The signs will be resistant to steam, aromatics, burning cigarettes, scratching, ink and paint. All markings, inks or paints shall be readily removable with soap and water or solvents without harm to the sign.

5. All signs shall be guaranteed for ten years in writing against fade, discoloration, chipping, peeling or any type of weathering.

6. All panels must pass the following Tests:

   a. Mill Spec P7788A
      Surface Endurance and Scratch Resistance
      Thermal Shock
      Humidity
      Impact

   b. Mil Std. 202B (Method 101A)

Salt Spray

c. Fed-Test Method Std. 141 Method 6152
Accelerated Weathering

d. Acidity, Cleaning Compounds and Fluids
Show no signs of change after the following tests:

a). Two panels to be immersed in a 0.1 NHCl solution for 30 minutes.
b). Two panels to be immersed in a 0.1 NHSO solution for 30 minutes.

e. Color Stability of Assembly:
The manufacturer must show evidence of the manufacturer's typical sign panels of this material having been subjected to Desert Sunshine Exposure Tests (Emmaqua) for a minimum exposure of 1,000,000 Langleys without color fade, discoloration of resin, or decomposition of assembly.

7. The Authority reserves the right to reject work performed under this Contract because of errors, deviations from these Specifications, unsatisfactory quality of performance, or damage. Work rejected must be replaced by the Contractor at no cost to the Authority within three weeks after notice of unacceptability. That notice will be given no later than twenty days after delivery.

B. Unless otherwise noted, typefaces shall be Helvetica medium and shall be industry standard normal letter spacing. Typical type and symbols layout for each sign type is indicated on the Contract Drawings. All type shall be placed as indicated on the Contract Drawings. Should any design conflict occur in the manufacture and fabrication of the signage, i.e. type not fitting, it shall be reported to the Engineer immediately, and such work should not be proceeded until the approval from the Engineer.

C. The Authority shall supply layout and copy for maps. All artwork for signs is the responsibility of the supplier. The manufacturer will supply a proof and will not proceed until advised. Positives will be the property of the Massachusetts Bay Transportation Authority.

2.03 STANDARD COLORS

The colors below have been designated as standard colors for the Authority. This does not constitute an endorsement of a particular brand, but is used for convenience due to the wide availability of color samples and paints. The Authority can provide color samples to contractors as required.

Color	Use	DUPONT/ IMRON Code No.*	PPG Code No.*
Red	Red Line	2622	71844
Blue	Blue Line	77257	15005
Orange	Orange Line	60659	61561
Green	Green Line	7456	47300
Yellow	Bus, Trackless Trolley	6561	82546

White	System Wide	817	91039
Purple	Commuter Rail	75334	50656
Black	System Wide	99	N/A

* On Dupont Dulux and Imron Transportation Finish Master Color Guide

2.04 SIGN FRAMING

A. In accordance with the Standards of Section 05500, fabricate all required supporting and enclosing frames.

B. Provide complete shop drawings.

C. Framing shall be hot-dip galvanized after fabrication and painted.

2.05 FASTENINGS AND ANCHORS

C. The sign fabricator shall design a complete system of fastenings and anchorage devices for the signs, as required for attachment to the concrete footings. Anchor and frame inserts shall have a pull-out strength of 2000 lbs. These may include, but are not limited to, concealed clip systems, face screws, epoxy adhesives, etc. Wherever reasonably possible, fastenings and anchorage devices shall be fully concealed, and shall be vandal proof. The Contractor is responsible to provide safe and secure installations in strict conformance to the governing laws and building code.

D. Fully describe proposed fastenings and anchorage devices for each sign type on the shop drawings.

E. Hardware: Provide all necessary hardware required to complete the Work, and as follows:

1. Bolts, Screws and Miscellaneous Fasteners: Brass or Bronze.

2. Hangers, Studs, Clip Angles, and Filler Plates: Commercial stock galvanized steel, M10-20.

3. Exposed Fasteners: As indicated above, and tamper proof.

2.06 CONCRETE FOOTINGS

A. Concrete for footings shall conform to Cast-In-Place Concrete Section 03300.

2.07 GRAVEL

A. Gravel for backfill shall conform to Earthwork Section 02200.

2.08 TACTILE SIGNS

A. Tactile signs shall conform to Tactile Signs Section 10426.

PART 3 - EXECUTION

3.01 PACKAGING AND DELIVERY TO THE MBTA

A. After sign panels are fabricated, package them in sets by station, to conform to the sign schedule submittal on which the MBTA has taken appropriate action.

B. Clearly mark each package to identify its contents, and the station for which the signs are to be used.

C. Pack sign panels in containers which will protect them from damage which could result from normal handling during delivery by truck or other public carrier.

1. Provide sub-assemblies of sign packaging, each weighing no more than 100 pounds, which will protect sign panels from installers breaking down containers and hand-carrying sub-assemblies and signs to specific locations.

D. Pack all required fastening and mounting materials with the sign panels in each of the packages.

3.02 INSTALLATION

A. General: Locate sign units and accessories where indicated, using mounting methods of the type described and in compliance with the manufacturer's instructions.

1. Install signs level, plumb, and at the height indicated, with sign surfaces free from distortion or other defects in appearance.

B. 1. The concrete foundation shall be set as indicated on the Drawings. After the foundation is cured and forms removed, all spaces around the foundation shall be filled with gravel and thoroughly compacted by tamping.

2. The anchor bolts shall be protected until the sign can be erected.

3. Set base plate into a bed of non shrink grout as indicated on the Drawings.

C. Post-Mounted Signs: Attach panel signs to steel post and angle framing using the methods indicated below:

1. Mechanically anchored steel frame and base plate to reinforced concrete footing. Set base plate onto bed of non-shrink grout, level, and secure with four anchor bolts per footing. Place sign within frame, screw tamperproof screws into frame to secure sign.

3.03 CLEANING AND PROTECTION

A. After installation, clean sign surfaces and surrounding finishes soiled by the construction according to the manufacturer's instructions.

B. Protect units from damage until acceptance by the Authority.

PART 4 - MEASUREMENT AND PAYMENT

4.01 GENERAL

A. The Work specified for new contractor supplied station signage will be measured as Contract Lump Sum for furnishing and installing the tactile signs and fiberglass signs, including steel frames, concrete foundations, fasteners, excavation, backfill and incidentals, complete in place.

B. The Work for removing and resetting existing station signage will be measured each complete in place, including removing, painting, storing and resetting signage. The Work will include concrete foundations, fasteners, excavation, backfill and incidentals, complete in place.

4.02 PAYMENT

A. Payment for fiberglass signs will be made at the Contract Lump Sum Price for SIGNAGE, Payment Item No. 1042.012.

B. Payment for removing and resetting station signage will be paid at the Contract Unit Price for Item No. 1042.100 SIGNS REMOVE AND RESET.

4.03 PAYMENT ITEMS

Item	Description	Unit
1042.012	SIGNAGE	LUMP SUM
1042.100	SIGN REMOVE AND RESET	EACH

END OF SECTION

SECTION 10426

TACTILE SIGNS

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section specifies the furnishing and installation of tactile & Braille signs as indicated on the Contract Drawings and as specified herein.

B. This Section also specifies Station Identification Braille signs with tactile letters and graphics with heavy gauge aluminum frames, and fasteners.

C. Related Work:

1. Section 10400: FIBERGLASS SIGNS

1.02 QUALITY ASSURANCE

A. Reference Standard: Massachusetts Bay Transportation Authority, Guidelines and Standards, Part V. Graphics, Revised Fall 1990 with 1995 Supplement is included, by reference in these Specifications and shall be followed and conformed with. A copy can be viewed or supplied upon request to the MBTA Design Department, 500 Arborway, Jamaica Plain, MA, 617-222-5044.

B. Text: All copy shall be Neue Helvetica Medium #65.

C. Color: Colors must match as closely as possible the MBTA standard colors as specified in the MBTA Guidelines and Standards, Part V, Graphics and as specified in Fiberglass Signs, Section 10400.

D. All signs must conform to the Americans with Disabilities Act Accessibility Guideline (ADAAG): 4.30 Signage, for permanent rooms and the Massachusetts Architectural Access Board (AAB) Regulations Section 41.2, 41.5 and 41.6.

1.03 SUBMITTALS

A. Submit in accordance with SUBMITTALS, Section 01300, except as modified herein.

B. Product Data: Submit manufacturer's technical data and installation instructions for sign required. Submit manufacturer's technical data and application for each type of adhesive or tape required.

C. Shop Drawings: Show fabrication and erection of signs. Include plans, elevations, and large-scale sections of typical members and other components. Show layout, accessories, anchors and installation details.

D. Samples: Provide the following samples of each sign component for initial selection of color, pattern and surface texture as required and for verification of compliance with requirements indicated.

1. 4 inch by 4 inch of all colors, patterns, and textures proposed for use in all signs.

2. Furnish full-size laser proofs of all signs.

3. After approval of color match and lettering proofs, submit for Authority's approval one full-size sign, as selected by the Engineer, complete in all respects and ready for installation. Submit as many times as necessary until Authority's approval has been obtained. Sample sign, upon approval, shall serve as a standard to be equaled for all other sign work.

4. Aluminum Frames with fasteners.

E. Schedule of Signs: Submit a schedule of signs listing all signs to be fabricated.

1. For each sign, describe sign material, copy on sign, and mounting system for sign, along with quantity.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:

1. Sub-Surface graphics tactile/Braille signs:
Globe Transportation Graphics
875 Hollins Street
Baltimore, MD 21201
800-755-6750

3M
Commercial Graphics Division
3M Center Building 220-6W-06
St. Paul, MN 55144-1000
800-328-3908

ASI Sign Systems
32 Clark Drive
P.O. Box 504
East Berlin, CT 06023
860-828-3331

2. Aluminum Frames

ADA Signage Systems
9 Pine Hill North
Ogunquit, ME 03907-0196
800-348-8088

Apco
13-25 Main Street

Franklin, MA 02038
508-520-2034

Bunting
409 West Warrington St.
Pittsburgh, PA 15210
412-481-0445

3. Or approved equal.

2.02 MATERIALS

A. Tactile/Braille Signs:

1. Tactile/Braille signs shall conform to one of the following types:

   a. Integral one piece 1/8" melamine plastic with blast etched, graphic and text, adhered to an aluminum back plate.
   b. Polyvinyl Fluoride top surface fused to a polycarbonate bottom surface with screen printed graphics and text on the polycarbonate side.

2. All signs shall have sub-surface raised/embossed soft shouldered text & graphics and domed grade 2 Braille dots conforming to the ADAAG and AAB requirements for permanent room signs. All raised/embossed elements must be back-filled with a hardened vandal resistant material.

3. All signs shall be compatible with the framing system used to mount the sign to various surfaces.

4. There shall be no top surface painted graphics, background colors or text.

5. Materials shall contain ultraviolet light inhibitors to minimize fading of colors.

6. Materials must be chemical resistant and vandal resistant.

7. Materials must be resistant to chipping, cracking and scratching.

B. Aluminum Frames:

Frames shall be made of heavy gauge vandal resistant extrusions with a black baked enamel or natural brushed aluminum finish. Frame shall be anchored with fasteners which will be concealed by the finished sign.

C. Fasteners and Anchors

1. Sign fabricator shall design a complete system of fasteners and anchorage devices. These may include, but are not limited to, concealed clip systems, expansion bolts, self-tapping screws, etc. Fastenings and anchorage devices shall be fully concealed and shall be vandal proof.

2. Fully describe proposed fastenings and anchorage devices for each sign type on the shop drawings.

2.03 PANEL SIGNS

A. Panel Signs: Comply with requirements indicated for materials, thicknesses, finishes, colors, designs, shapes, sizes, and details of construction.

1. Produce smooth, even, level sign panel surfaces, constructed to remain flat under installed conditions within a tolerance of plus or minus 1/16 inch measured diagonally.

B. Graphic Content and Style: Provide sign copy that complies with the requirements indicated for size, style, spacing, content, position, material, finishes, and colors of letters, numbers, and other graphic devices.

PART 3 - EXECUTION

3.01 INSTALLATION

A. General: Locate sign units and accessories where indicated, using mounting methods of the type described and in compliance with the manufacturer's instructions.

1. Install signs level, plumb, and at a height of 60 inches above the finished grade to the centerline of the sign, with sign surfaces free from distortion or other defects in appearance.

3.02 CLEANING AND PROTECTION

A. After installation, clean sign surfaces and surrounding finishes soiled by the construction according to the manufacturer's instructions.

B. Protect units from damage until acceptance by the Authority.

PART 4 - MEASUREMENT AND PAYMENT

4.01 GENERAL

No separate measurement or payment will be made for work required under this Section but will be measured and paid at the Lump Sum Price for Signage, Payment No.. 1042.012. All costs in connection therewith will be considered incidental to the item of work.

END OF SECTION

SECTION 14561

MANUALLY OPERATED MOBILE LIFTS

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section specifies the furnishing of manually operated mobile lifts necessary to provide ADA compliant accessibility to existing Light Rail Vehicles during construction.

B. The Massachusetts Bay Transportation Authority (MBTA) intends to bring its Light Rail transit system into compliance with the Americans with Disabilities Act (ADA). A major aspect of this task involves making the existing fleet of Light Rail Vehicles accessible to persons with disabilities. The MBTA intends to purchase platform mounted lift equipment which will allow persons in wheelchairs to access the existing Light Rail Vehicles (LRV). Access must be provided at the front door of the LRV and must permit a wheelchair to both enter and exit the LRV. This equipment will be used at each platform at each station.

C. The lifts shall be designed as mobile lifts.

D. The lifts shall be placed at different locations on the platform or temporary platform during construction as directed by the Engineer. The lifts will be moved into position when needed by the train operator or MBTA personnel.

E. The lifts shall provide wheelchair access to Boeing LRV's, Kinki Sharyo Type 7 LRV's, and Type 8 Low Floor Vehicles.

F. The lift design must facilitate future platform raising to a height in the range of 3" to 38" above top of rail.

1.02 CODE COMPLIANCE

A. Part III, Architectural and Transportation Barriers Compliance Board, 36 CFR Part 1192, Americans with Disabilities Act (ADA) Accessibility Guidelines for Transportation Vehicles, Final Guidelines.

1.03 SUBMITTALS

A. Submit in accordance with SUBMITTALS, Section 01300, except as modified herein.

B. Prior to construction of mobile lift, the manufacturer shall submit to the MBTA for approval shop drawings, plan of bridge ramp and all details.

C. Submit graphics for approval prior to finishing text and layout.

PART 2 - PRODUCT

2.01 OPERATION

A. The lift shall be entirely manually operated and shall not require electricity, batteries, gasoline, diesel fuel, or other sources of energy beyond one human operator. All mechanisms shall be vandal proof.

B. The lift shall be configured such that it can be easily operated by a single operator. All functions required to deploy and operate the lift must be able to be performed from one position, i.e., the operator should be capable of operating the lift from a single point.

C. The lift shall be weather resistant, not effected by moisture, snow or ice, and shall be operable in the range of -20 F to +120 F.

The force required to operate a crank or other lifting mechanism shall not exceed 25 lbs with a 600 lb load on the lift.

Due to the difficulty of correctly aligning the train door with the lift, the lift must be capable of functioning over a 3" range of train position.

In the "locked" or "secured" position, the lift deck shall be at ground level and access onto the lift deck by a wheelchair shall be prevented.

2.02 DIMENSIONS

A. Site conditions dictate that the overall dimensions of the lift not exceed a width of 3'-9" and a length of 10'-0", not including the bridge ramp in its deployed position. The long dimension of the lift shall be parallel to the vehicle axis and/or the tracks.

B. The maximum stowed dimensions of the lift shall be 40" x 74".

C. The lifting platform shall be a minimum of 55" x 34".

D. It shall be possible to use the lift where the distance between the open rail car door and an adjacent structure is no more than 96".

E. The maximum lifting height of the deck shall be 38".

2.03 LOAD CAPACITY

A. The design load of the lift and ramps shall be at least 600 pounds.

2.04 LIFTING TIME

A. Lifting time shall be 30 seconds to the full 38 inch height. To assist the operator, the proper lift height should be clearly indicated on the mechanism.

2.05 LIFT SAFETY

A. The lift deck shall be held in the "up" position by dual load-activated brakes (or equal) and in addition shall be equipped with a cranking handle or mechanism which locks automatically when released, as a secondary or back-up braking system.

B. Safety railings/handrails shall be provided for fall protection. At least one side of all ramps shall be provided with railings. A two inch barrier shall also be provided at all lift and ramp edges which have drop-offs.

C. All deck and ramp surfaces shall be provided with a slip resistant finish.

D. All lift and ramp components and edges which may create a safety hazard to pedestrians shall be provided with high visibility reflective paint or tape.

2.06 CONTROL AND KEYING

A. When not in use, lift shall be completely inoperable and without movable parts. All lift controls shall be key locked with the lift in the down position. Configure a single lock such that it releases all lift control but is interlocked and key cannot be removed until lift and controls are returned to ground position. Key system, controls and interlocks to be fully weather proof and vandal resistant. MBTA to provide the vendor with sample key and lock mechanism details.

2.07 MATERIALS

A. Lifts shall be weatherproof and all materials shall be resistant to corrosion. All bearings, if utilized, shall be permanently sealed ball type and no item on the lifts shall require servicing or inspection more often than once per year. All workmanship and materials shall be guaranteed for a period of two years from receipt by the MBTA.

2.08 LEVELING DEVICE

A. The lift shall be equipped with an automatic leveling device to compensate for uneven platforms.

2.09 GRAPHICS

A. The universal Accessibility symbol shall be displayed on the lift equipment.

B. Lift operation instructions and precautions for the lift user shall be provided where required.

C. Signage indicating instructions and precautions for the lift user shall be provided where required.

D. All graphics and signage text, layouts and mounting locations and details to be approved by the MBTA. Art to be supplied by the MBTA.

PART 3 - EXECUTION

3.01 SAFETY AND TESTING

A. All working parts, such as cables, pulleys, and shafts, which can expected to wear, and upon which the lift depends for support of the load, shall have a safety factor of at least six, based on the ultimate strength of the material. Nonworking parts, such as deck, frame and attachment hardware which would not be expected to wear, shall have a safety factor of at least three, based on the ultimate strength of the material. Each lift shall be factory load tested to 3,000 pounds with a maximum deflection at the deck corners of no more than 0.50 inches. No permanent deflection shall be allowed under load test. Load testing shall be done under the supervision of, and certified by, the manufacturer's professional engineer. Original or certified copies of the test shall be provided to the MBTA. The lifts shall be designed such that failure of any single item does not result in free fall of the lift.

B. The lift shall be electrically grounded when in use.

3.02 MANUALS

A. Four (4) copies of a detailed "Operation and Maintenance Manual" shall be provided with each lift, which will include a parts list, photographs, periodic preventative maintenance procedures, schedules, checklists and warranties.

3.03 DELIVERY SCHEDULE

A. Fully functional mobile lifts shall be delivered to the project site for MBTA approval within 60 days of award of the Contract.

PART 4 - MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

A. Mobile lift shall be measured per each, furnished and installed complete in place.

4.02 PAYMENT

A. Payment for mobile lift as specified will be made at the Contract Unit Price for Payment Item No.1440.301, MOBILE LIFT.

4.03 PAYMENT ITEMS

Item No.	Description	Unit
1440.301	MOBILE LIFT	EACH

END OF SECTION

SECTION 16050

BASIC MATERIALS AND METHODS FOR ELECTRICAL WORK

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section specifies basic materials and methods of installation applicable to electrical work as indicated on the Drawings in accordance with the Standard Specifications Section 16050, except as modified herein.

B. Related Work: Related requirements are included in, but not limited to, the following Sections:

1. Section 02100 - SITE PREPARATION

2. Section 02200 - EARTHWORK

3. Section 02800 - EXTERIOR CONDUIT SYSTEMS

4. Section 02830 - SITE IMPROVEMENTS

C. Drawings and general provisions of the Contract including General and Supplementary Conditions and Division I Specification Sections apply to work of this Section.

D. All work performed and all materials furnished shall be reasonably close conformity with the dimensions, details, physical and chemical characteristics of materials, and other specific requirements of the Contract. Where the terms "in conformity with", in agreement with", "in compliance with" or terms of like exactness occur in these Specifications, they shall be construed to mean, "in reasonable close conformity with".

E. Due to the continuous and rapid changes experienced by the electrical industry, minor deviations in electrical materials or methods from those specified herein will be acceptable provided that the materials or methods are equal to or better than those originally specified, the functional requirements of the specifications are met, and the materials or methods are accepted standards in the electrical industry at the time of this contract is executed.

F. Excavation for placing or construction of any of the items shall be made to the minimum practicable limits. Where, in the opinion of the Engineer, the base on which an item is to be founded is unsuitable as a foundation, the Engineer may direct further excavation and backfilling with gravel borrow to the elevation of the proposed base of the foundation. Where rock is encountered in the course of excavation, only the rock that will interfere with proper placing of the item shall be removed. Excavation and backfill is specified in Section 02200, Earthwork.

G. Wherever in the course of operations it is necessary to temporarily remove parts of existing facilities or other constructions in order to do the directed work, the Contractor shall finally replace and restore the construction in kind. The payment for the components of the work for which such removals are made shall also include full compensation for restorations.

H. The Contractor shall bear all costs to provide temporary construction power and shall contract

directly with the local utility company. If the utility is unable to provide this service and the MBTA must provide temporary electric service to the contractor then all associated costs will be billed by the MBTA directly to the Contractor. The Contractor shall have a dedicated metered panel.

I. The Contractor is also responsible for protecting the MBTA Signal System throughout the construction phase. If the Signal System is impacted by the Contractor's operations, the Contractor shall be solely responsible for bearing the cost for providing a signal engineer to supervise the repairing work. The signal engineer's credentials must be approved by the MBTA's Signal Department.

J. The Contract Lump Sum price for the Electrical Work as described hereinafter and as listed in the bid form includes all materials complete in place as part of the entire system, whether the component parts of the system are specifically mentioned or whether they are implied by the nature and satisfactory operation of the system.

1.03 SUBMITTALS

D. Submit the following for approval in compliance with SUBMITTALS, Section 01300.

E. Submit shop drawings for review of all conduit systems, raceways, and pull boxes.

PART 2 - PRODUCTS

2.01 GENERAL REQUIREMENTS

G. Fiberglass Epoxy (FRE): Filament wound reinforced thermosetting resin pipe conforming to ASTM D 2996 for all buried work.

2.02 RIGID GALVANIZED STEEL CONDUIT AND ACCESSORIES

E. Rigid galvanized steel conduits for buried to exposed sweeps and all exposed work. Minimum size 1".

2.03 LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT AND FITTINGS

D. Conduit shall be minimum 1" diameter.

2.10 OUTLET, JUNCTION, PULL BOXES, AND HANDHOLES

G. Outlets Boxes: Cast Aluminum

1. Each outlet in wiring or raceway systems shall be provided with an outlet box to suit conditions encountered. Boxes installed in normally wet locations shall be of cast-metal type having hubs. Concealed boxes shall be cadmium plated or zinc coated sheet metal type.

2. Each box shall have sufficient volume to accommodate number of conductors in accordance with requirements of Code. Boxes shall not be less than 1-1/2" deep unless shallower boxes are required by structural conditions and are specifically approved by Architect. Flush or recessed fixtures shall be provided with separate junction boxes

when required by fixture terminal temperature requirements. Switch and receptacle boxes shall be 4" square or of comparable volume.

3. Acceptable manufacturers:

   Appleton
   Crouse Hinds
   Steel City
   RACO
   Or Approved Equal

N. Pull and Junction Boxes: Where indicated on plans, and where necessary to terminate, tap off, or redirect multiple raceway runs or to facilitate conductor installation, furnish, and install appropriately designed boxes. Boxes shall be fabricated from code gauge steel assembled with corrosion resistant machine screws. Box size shall be as required by Code or as indicated on drawings. Where intermediate cable supports are necessary because of box dimensions, provide insulated removable core brackets to support conductors. Where indicated on plans, junction boxes are to be equipped with barriers to separate circuits. Where splices are to be made, boxes shall be large enough to provide ample work space. All conductors in boxes are to be clearly tagged to indicate characteristics. Boxes shall be supported independently of raceways. Junction boxes in moist or wet areas shall be galvanized type with gasketed screws covers with stainless steel screws.

O. Pre-Cast Concrete Handholes: Handholes and castings shall be constructed and sized as indicated on the Drawings.

PART 3 - EXECUTION

3.02 CONDUIT AND FITTINGS

A. Metallic Electrical Conduit and FRE Conduit

1. Install conduit in accordance with Massachusetts Electrical Code and as indicated. Prevent concrete and other materials from obstructing the conduit. Pack all outlet, pull and junction boxes with paper prior to pouring concrete ends of embedded conduit. Do not use conduit smaller than 1" diameter.
2. Make all conduit bends in accordance with the Massachusetts Electrical Code, with not more than three (3) 90° bends per run. Where more than three (3) 90° bends are required in a particular run, install pull boxes as required to facilitate pulling conductors.

3.08 WIRING

B. Wire Pulling

5. All conductors and grounding wire shall be drawn into conduit without damage to covering, sheath, insulation or wires. This wiring shall not be done until all work which may damage the wires has been completed. In pulling, all wires shall be drawn freely into conduits without kinks or bends, twisting or lapping. In general, all conductors in each conduit run shall be pulled at the same time, fed from free running reels. Powdered soapstone, talcum or other approved lubricant may be used to assist in

placing wire and cable in conduits.

6. Testing

The entire electrical wiring system shall be tested for continuity, grounds, resistance to ground, insulation resistance, shorts and opens. This shall be done by means of a megohm-meter test and a continuity test. After installation of the wiring system, the system shall be tested with 500 volt megger. Tests on each conductor shall be between each phase conductor insulated and non-insulated conductor. When the resistance of insulation is less than 100 megohms between any conductors, the Contractor shall locate the point or points at fault and make proper corrections and then demonstrate by further testing that the faults are eliminated. These tests shall be conducted in the presence of the Engineer. The test results shall be submitted to the Engineer for further review and approval. If any results are questionable, inconsistent or incomplete, the Contractor shall repeat the tests and make necessary corrections at the request of the Engineer. No wiring will be accepted until these tests are satisfactorily performed and approved. The Contractor shall furnish the Engineer a written report of the megohm-meter readings and the continuity tests for a permanent project record. All tests and any necessary repairs or replacements and re-tests will be performed at the Contractor's expense.

7. Resistance to earth ground shall measure less than two (2) ohms. In the event the resistance to earth does not meet the above requirement, additional ground rods must be driven at no additional cost to the Authority until two (2) ohms or less is achieved.

3.10 CONNECTIONS TO EXISTING SYSTEMS

A. The Contractor shall notify the electric company prior to disconnecting and re-connecting conduits and wires to the existing systems. No work shall be performed without a written approval from the electric company. The cope of the written approval shall be submitted to the Engineer prior to the start of the work.

B. All connection work shall conform to the electric company's requirements.

PART 4 - MEASUREMENT AND PAYMENT

4.01 GENERAL

A. Separate measurement and payment will not be made for the work of this Section complete in place, but all costs therefore shall be included in the Contract Lump Sum Price for Payment Item No. 1600.150, for the work as indicated herein.

4.02 PAYMENT ITEMS

Item No	Description	Unit
1600.150	SITE ELECTRICAL WORK	LUMP SUM

END OF SECTION

SECTION 16450

GROUNDING

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section specifies furnishing and installing complete system neutral grounding, equipment grounding and building structural grounding in accordance with the Standard Specifications Construction Section 16450, except as modified herein.

B. The work under this section shall include furnishing all labor, materials, equipment and services necessary to construct and install the complete electrical grounding system and connections thereto as shown on the Drawings and specified herein. This shall include all ground wire, ground rods, connections to existing grounding systems, testing and incidentals necessary to provide a complete grounding system.

PART 2 - PRODUCTS

2.01 BARE GROUND WIRE

A. Grounding shall be accomplished in conformance with the relevant provisions of Section 16450. The Contractor shall furnish and install a ground conductor throughout the conduit system and all electrical components shall be properly bonded thereto. The size of the equipment grounding conductor shall be as scheduled on the drawings. Additional ground rods may be installed at various locations if required to meet the minimum resistance to earth ground testing requirements specified under Section 16050.

PART 3 - EXECUTION

3.04 EQUIPMENT GROUNDING

G. Exterior Grounding and Bonding

1. With each cable/conduit run an equipment grounding conductor shall be installed to which all equipment shall be bonded in accordance with standard practice and the Massachusetts Electrical Code. The entire electrical system with metal parts shall be made mechanically and electrically secure to form a continuous system and shall be effectively grounded to the ground electrode at the service connection point and other grounding electrodes throughout the System.

2. Bonding of metallic conduit systems shall be by means of approved grounding bushings, compatible with the conduit, and bonding jumpers.

3. The rigid steel conduit system shall not be used as the equipment grounding conductor.

PART 4 - MEASUREMENT AND PAYMENT

4.01 GENERAL

A. Separate measurement and payment will not be made for the work of this Section complete in place, but all costs in connection therewith shall be considered incidental to Payment Item No. 1600.150 SITE ELECTRICAL WORK, as specified in Section 16050.

END OF SECTION

SECTION 16500

LIGHTING

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section specifies furnishing and installing new pole mounted light fixtures in accordance with Standard Specifications Construction Section 16500 except as modified herein.

B. The contract lump sum price for electric work as described in Section 16050 and as listed in the Bid Form, the work includes all materials complete in place for the entire lighting system, whether the component parts of the system are specifically mentioned or whether they are implied by the nature and satisfactory operation of the system.

C. Except where modified by a specific notation to the contrary, it shall be understood that the indication and/or description of any electrical lighting item in the Drawings and Specifications for lighting work carries with it the instruction to furnish, install and connect the item as part of the lighting work regardless of whether or not this instruction is explicitly stated.

D. No exclusion from or limitation in, the symbolism used on the drawings for lighting work or the language used in the specifications for lighting work shall be interpreted as a reason for omitting the appurtenances or accessories necessary to complete any required system or item of equipment.

E. Certain details appear on the Drawings for lighting work which are specific with regard to the dimensioning and positioning of the work. These are intended only for general information purposes. They do not obviate field coordination for individual items of the indicated work.

1.03 SUBMITTALS

C. Submit shop drawings for new light fixtures, poles, pole bases and lamps for approval in compliance with submittals, Section 01300.

1.06 PROJECT CONDITIONS

A. All new light fixtures within limits of work as indicated on the Drawings are to be provided with lamps unless otherwise directed by the Engineer.

1.07 QUALITY ASSURANCE

A. Manufacturer's Qualifications: Firms regularly engaged in manufacture of exterior lighting fixtures and poles of sizes, types and ratings required, whose products have been in satisfactory use in similar service.

B. Installer's Qualifications: Firms with successful installation experience on projects with exterior pole mounted lighting fixture work similar to that required for this project.

PART 2 - PRODUCTS

2.06 EXTERIOR POLE MOUNTED LIGHT FIXTURES

A. Provide new light fixtures and poles as indicated on drawings to comply with requirements of MBTA Standards.

PART 3 - EXECUTION

3.07 FIELD QUALITY CONTROL AND INSPECTION

E. Replace defective light fixtures, poles and burned out lamps for a period of one year following the Date of Final Acceptance.

F. Furnish stock or replacement lamps amounting to 15%, but not less than 4 lamps in each case, of each type and size lamp used in each type fixture. Deliver replacement stock as directed by the Engineer.

3.08 EXTERIOR POLE MOUNTED LIGHT FIXTURES

A. Install light fixtures, poles and lamps in accordance with fixture manufacturer's written instructions, applicable requirements of NEC, NECA's "Standard of Installation," NECA standards, and with recognized industry practices to ensure that lighting fixtures fulfill requirements.

B. Tighten connectors and terminals, including screws and bolts, in accordance with equipment manufacturer's published torque tightening values for equipment connectors. Where manufacturer's torquing requirements are not indicated, tighten connectors and terminals to comply with tightening torques specified in UL Stds. 486A and B, and the National Electrical Code.

3.09 ADJUSTING AND CLEANING

A. Clean exterior lighting fixtures of dirt and construction debris upon completion of installation. Clean fingerprints and smudges from lenses.

PART 4 - MEASUREMENT AND PAYMENT

4.01 GENERAL

A. Separate measurement and payment will not be made for the work of this section complete in place, but all costs in connection therewith shall be considered incidental to Payment Item No. 1600.150 SITE ELECTRICAL WORK, as specified in Section 16050.

END OF SECTION

SECTION 16471

DISTRIBUTION AND BRANCH CIRCUIT PANELBOARDS

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Section specifies distribution and branch circuit panelboards in accordance with MBTA Standard Specifications Section 16471, except as modified.

1.02 QUALITY CONTROL

A. Panelboards used at service entrance shall be suitable for service entrance applications. Refer to contract drawings.

1.03 SUBMITTALS

E. Material and equipment requiring shop drawings or product data submittal shall include:

1. Panelboards
2. Circuit breakers

PART 2 - PRODUCTS

2.02 CIRCUIT BREAKERS

I. Circuit breakers shall be industrial type.

2.04 PANELBOARDS

Q. Panelboards shall be furnished with an insulated solid neutral copper bus and a suitable copper grounding bus.

2.08 LIGHTING PANELBOARDS

A. Lighting Panelboards shall be 480/277 Volt, three phase, four wire, and shall have single pole, 277Volt, bolt-in type molded case circuit breakers in the quantities and sizes indicated on the Contract Drawings.

B. Panelboards shall have hinged trim covers.

2.09 MISCELLANEOUS POWER AND LIGHTING PANELBOARDS

A. Miscellaneous power and lighting Panelboards shall be 208/120 Volt, three phase, four wire, or 480/277 Volt, 3 phase, 4 wire and shall have bolt-in molded case circuit breakers in the quantities and sizes indicated.

B. Panelboards shall have hinged trim covers.

PART 4 - MEASUREMENT AND PAYMENT

4.01 GENERAL

A. Separate measurement and payment will not be made for the work of this Section complete in place, but all costs in connection therewith shall be considered incidental to Payment Item No. 1600.150 SITE ELECTRICAL WORK, as specified in Section 16050.

END OF SECTION

MBTA CONTRACT NUMBER A27CN02,

Light Rail Accessibility Program, Brookline Village & Longwood Stations
Brookline, Massachusetts

ADDENDUM NO. 1

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

MBTA CONTRACT NO. A27CN02

LIGHT RAIL ACCESSIBILITY PROGRAM
BROOKLINE VILLAGE STATION & LONGWOOD STATION

BROOKLINE, MASSACHUSETTS

ADDENDUM NO. 1

The attention of bidders submitting bids for the above project is called to the following Addendum to the Bid form, Specifications and Contract Drawings.

The items set forth herein, whether of omission, addition, or substitution are to be included in and form a part of the Bid submitted.

THE NUMBER OF THIS ADDENDUM (NO. 1) MUST BE ENTERED IN THE SPACE PROVIDED ON PAGE 14B OF THE FORM FOR BID IN THE BID FORM.

Date: March 30, 2007

By: Daniel A. Grabauskas
General Manager

BID FORM

1. **SCHEDULE OF BID PRICES**, Delete pages 15B9(1) through 15B(13) and is replaced with new SCHEDULE OF BID PRICES pages 15B(1) through 15B(13) attached as pages 38 through 50 of this Addendum No.1

CONSTRUCTION SPECIFICATIONS

1. **TABLE OF CONTENTS**

Delete Section 01520 in its entirety.

Insert Appendix 1 MBTA SPECIAL INSTRUCTIONS, APRIL 2003 included as pages 17 through 30 of this Addendum No. 1.

Insert Appendix 2 Draft Order of Conditions, Brookline Conservation Commission. Included as pages 31 through 34 of this Addendum No.1.

2. **SECTION 01020– ALLOWANCES,** delete and replace sub-section 1.02 with the following:

1.02 ALLOWANCE ITEMS

A. EXISTING SITE UTILITIES, Section 02650. Include an allowance amount of $22,000 for Telephone Relocation, Item 0211.488 for Telephone Company and Utility Relocation.

B. EXISTING SITE UTILITIES, Section 02650. Include an allowance amount of $2,000 for Electric Company payments - Item No. 0130.432, for Electrical Company services.

C. LEAD-BASED PAINT ABATEMENT, Section 02090. Include an allowance amount of $22,000 for Removal of Lead Based Paint – Item 0212.152

D. CONSTRUCTION SAFETY, Section 01568. Include an allowance amount of $180,000 for Traffic Officers Services – Item 0130.430

3. **SECTION 01322– CONSTRUCTION SCHEDULE,** delete and replace paragraph 1.09 A.1 with the following:

1. A fixed price not to exceed $ 750.00 will be made to reimburse the contractor for CPM Scheduling. Payment will be made under Item No. 0110.002, CPM Scheduling, to the Contractor.

4. **SECTION 01520– PROCEDURE FOR WORK VEHICLES,** has been deleted in its entirety and replaced with MBTA SPECIAL INSTRUCTIONS dated April 2003 and included as Appendix 1 on pages 17 through 30 of this Addendum No. 1.

5 **SECTION 02100 – SITE PREPARATION**; delete and replace paragraph 3.01A with the following:

3.01 PROTECTION

A. All work shall conform to the Brookline Conservation Commission Draft Order of Conditions in the Supplemental Conditions Section. Prior to any site preparation, furnish and install erosion and sediment controls in accordance with manufacturer's instructions and as shown on the Drawings. Stake locations in the field for review and approval by the Engineer prior to installation in areas as shown on the Drawings. The erosion control and sedimentation controls shall be maintained throughout construction as directed by the Engineer.

(REFER TO DRAFT ORDER OF CONDITIONS IN APPENDIX 2 OF THIS ADDENDUM NO. 1.)

Delete and replace sub-section 4.04 with the following:

4.04 PAYMENT ITEMS

Revise as follows:

Item No.	Description	Unit
0211.710	REMOVE AND REPLACE PASSENGER STATION PLATFORMS	LUMP SUM
0212.135	REMOVE AND DISPOSE OF ASPHALT/CONCRETE PAVEMENT	CUBIC YARD
0222.003	UNCLASSIFIED EXCAVATION	CUBIC YARD
0262.701	CURBING – REMOVE AND RESET	LINEAR FOOT
0271.400	REMOVE EXISTING FENCES	LINEAR FOOT
0282.211	BALES OF HAY FOR EROSION CONTROL	LINEAR FOOT
0282.100	TREES REMOVED – UNDER 24"	EACH
0291.943	TIMBER EDGE BEAMS	LINEAR FOOT
0590.000	HIGHWAY GUARD REMOVE AND RESET	LINEAR FOOT
0590.198	STEEL BEAM HIGHWAY GUARD TYPE SS	LINEAR FOOT
1042.052	PORTABLE BARRIER TYPE III	EACH

1042.062	REFLECTORIZED DRUM WITH FLASHER	DRUM DAY
1042.089	SIGN AND SIGN SUPPORT REMOVED	EACH
1042.100	SIGNS REMOVED AND RESET	EACH
1042.240	SAFETY SIGNAGE FOR CONSTRUCTION OPERATIONS	SQUARE FOOT
1042.870	SAFETY CONTROLS FOR CONSTRUCTION OPERATIONS	LUMP SUM
1076.021	PASSENGER SHELTER - REMOVE AND RESET	EACH
1600.150	SITE ELECTRICAL WORK	LUMP SUM

6. **SECTION 02200 - EARTHWORK**; delete and replace PART 4 with the following:

PART 4 - MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

A. Except as specified below no separate measurement or payment will be made for work required under this Section. All costs in connection therewith shall be considered incidental to the item of work to which they pertain.

1. Unclassified Excavation will include Earth Excavation, Muck Excavation and test pits and will be measured by the cubic yard for additional quantities resulting from modifications to details shown on the Drawings, and for handling, transportation and disposal of such amount of materials.

2. Gravel borrow will not be measured separately, but will be considered incidental to the item to which it pertains.

3. Sand borrow will not be measured separately, but will be considered incidental to the item to which it pertains.

4. Rock excavation will not be measured separately, but will be considered incidental to the item to which it pertains.

5. Trench excavation and backfilling will not be measured separately, but will be considered incidental to the work to which it pertains including but not limited to, drainage pipe, conduits, structures and platform work.

J. Disposal of surplus and unsuitable material will not be measured separately, but will be considered incidental to the item of work to which it pertains.

M. Fine grading and compaction shall be measured on a square yard basis.

4.02 PAYMENT

F. Unclassified Excavation for the quantities as specified will be paid for at the Contract Unit Price for UNCLASSIFIED EXCAVATION, Payment Item No. 0222.003.

4.03 PAYMENT ITEMS

Item No.	Description	Unit
0222.003	UNCLASSIFIED EXCAVATION	CUBIC YARD
0221.212	FINE GRADING AND COMPACTION	SQUARE YARD

7. **SECTION 02400 – DRAINAGE AND SEWER SYSTEMS**; Delete and replace sub-section 4.02 with the following:

4.02 PAYMENT ITEMS

Item No.	Description	Unit
0222.540	CB, MH or LB – Adjust to Line and/or Grade	EA
0250.015	Clean CB's and MH'	EA
0250.113	Abandon Catch Basin	EA

8. **SECTION 02444 – CHAIN LINK FENCES AND GATES**; delete and replace PART 4 with the following:

4.01 MEASUREMENT

A. Chain link fence vinyl coated galvanized will be measured by the square foot, complete in place, parallel to the finished grade from center to center of end posts.

B. Construction fence will be measure by the liner foot, complete in place, parallel to the finished grade from center to center of end posts.

C. Construction fence removed and reset will be measured by the linear foot, complete in place, after completion of Phase 1 construction. No separate payment will be made for final removal and disposal at completion of the work.

4.02 PAYMENT

A. Chain Link Fence Vinyl Coated Galvanized will be paid for at the contract unit price for Payment Item No. 0271.112 Chain Link Fence Vinyl Coated Galvanized.

B. Construction Fence will be paid for at the contract unit price for payment item No. 0271.955 Construction Fence.

C. Construction Fence Removed and Reset will be paid at the contract unit price for Payment Item 0271.956 Construction Fence - Removed and Reset.

4.03 PAYMENT ITEMS

Item No.	Description	Unit
0271.112	CHAIN LINK FENCE VINYL COATED GALVANIZED	SF
0271.955	CONSTRUCTION FENCE	LF
0271.956	CONSTRUCTION FENCE – REMOVE AND RESET	LF

9. **SECTION 02509 – SUBBASE AND BASE COURSES**; delete and replace sub-section 4.03 with the following:

4.03 PAYMENT ITEMS

Item No.	Description	Units
0222.571	COMPACTED GRAVEL SUBBASE	TN
0222.596	¾" CRUSHED STONE	CY

10. **SECTION 02513– BITUMINOUS CONCRETE PAVEMENT**; delete and replace sub-section 4.03 with the following:

4.03 PAYMENT ITEMS

Item No.	Description	Unit
0261.115	SAW CUTTING BITUMINOUS CONCRETE	LF
0261.126	BITUMINOUS CONCRETE EXCAVATION BY COLD PLANE	SQUARE YARD
0261.151	BITUMINOUS CONCRETE PAVEMENT	TON
0337.402	HANDICAP RAMP	EACH

11. **SECTION 02525 – GRANITE CURBING AND EDGING**; delete and replace PART 4 with the following:

4.01 MEASUREMENT

A. Granite curb will be measured by the linear foot complete in place. Including gravel borrow, excavation, grading and compaction, bituminous concrete patching, including all labor, equipment, materials, tools and incidentals.

B. Curbing removed and reset will be measured by the linear foot complete in place. Including gravel borrow, excavation, grading and compaction, bituminous concrete patching, including labor, equipment materials, tools and incidentals.

C. No separate measurement will be made for cleaning and sandblasting removed curb to be reset.

D. No separate measurement will be made for curb removed and discarded.

E. No separate measurement will be made for curb removed and stacked.

4.02 PAYMENT

A. Payment for Granite Curb will be made at the Contract Unit Price for Payment Item No. 0262.150, Granite Curb.

B. Payment for Granite Curb Curved will be made at the Contract Unit Price for Payment Item No. 0262.185, Granite Curb Curved.

C. Payment for Straight Granite Transition Curb-Ped Ramps will be made at the Contract Unit Price for Payment Item No. 0262.249 Straight Granite Transition Curb-Ped Ramps.

D. Payment for Granite Transition Curb will be made at the Contract Unit Price for Payment Item No. 0262.251, Granite Transition Curb.

E. Payment for Curbing Removed and Reset will be made at the Contract Unit Price for Payment Item No. 0262.701, Curbing Removed and Reset.

4.03 PAYMENT ITEMS

Item No.	Description	Unit
0262.150	GRANITE CURB	LF
0262.185	GRANITE CURB CURVED	LF
0262.249	STRAIGHT GRANITE TRANSITION CURB – PED RAMPS	LF
0262.251	GRANITE TRANSITION CURB	LF
0262.701	CURBING REMOVED AND RESET	LF

12. SECTION 02650 – EXISTING SITE UTILITIES; delete and replace PART 4 with the following:

4.01 MEASUREMENT

A. Work specified in this Section for ELECTRIC COMPANY will not be measured, but will be paid for under an allowance for Item No. 0130.432. The allowance shall be adjusted to the actual amount paid for such work. The Contractor shall furnish itemized statements of the work performed and give the Engineer copies of accounts, bills, and vouchers relating thereto, and unless the Contractor furnishes such itemized statements, bills, and vouchers he shall not be entitled to payment for the related work. The allowance will be to reimburse the Contractor for all work required.

1. An allowance amount as specified in ALLOWANCES, Section 01020 shall be included in the bid form.

B. Work specified in this Section for TELEPHONE RELOCATION will not be measured, but will be paid for under an allowance for Item 0211.488. The allowance shall be adjusted to the actual amount paid for such work. The Contractor shall furnish itemized statements of the work performed and give the Engineer copies of accounts, bills, and vouchers relating thereto, and unless the Contractor furnishes such itemized statements, bills, and vouchers he shall not be entitled to payment for the related work. The allowance will be to reimburse the Contractor for all work required.

1. An allowance amount as specified in ALLOWANCES, Section 01020 shall be included in the bid form.

C. Test pits will be measured and paid for as specified in EARTHWORK, Section 02200.

D. Utility castings adjusted to grade, including modifications to existing structures of 2 feet in grade and 2 feet in line shall not be measured separately but will be included in the Contract Lump Sum Price for Adjusting Castings within the limit of work.

E. Utilities castings to be abandoned shall be removed and stacked and shall not be measured separately but will be included in the Contract Lump Sum Price for Adjusting Castings.

F. Excavation, backfilling, concrete and masonry, and all incidental work will not be separately measured, but all costs shall be considered incidental to the item or items of work to which they pertain.

G. Concrete and masonry work for additional quantities as resulting from field modification to details shown on the Drawings or as determined and approved by the Engineer, will not be paid for separately.

4.02 PAYMENT

A. Payment for the services of Electric Company for disconnection and reconnection will be based on itemized statements furnished by the Contractor to the Engineer without mark-up for overhead and profit. Payment will be made under Payment Item No. 0130.432 ELECTRIC COMPANY.

B. Payment for the services of Telephone Company, for relocation will be based on itemized statements furnished by the Contractor to the Engineer without mark-up for overhead and profit. Payment will be made under Payment Item No. 0211.488 TELEPHONE RELOCATION.

C. Payment for Utility Castings Adjusted shall be made at the Contract Lump Sum Price under Item No. 0250.116 ADJUST UTILITY CASTINGS TO GRADE.

D. No separate payment for Concrete Work.

4.03 PAYMENT ITEMS

Item No.	Description	Unit

0130.432	ELECTRIC COMPANY	ALLOWANCE
0211.488	TELEPHONE RELOCATION	ALLOWANCE
0250.116	ADJUST UTILITY CASTINGS TO GRADE	LUMP SUM

13. SECTION 02830 – SITE IMPROVEMENTS; delete and replace PART 4 with the following:

4.01 MEASUREMENT

A. Furnishing and installing parking meter posts, tree pits and bollard, complete in place including all accessories and incidental shall be measured as a lump sum for Item No. 0270.000 Site Improvements.

B. Furnishing and installing benches complete in place including all accessories shall be measured each.

C. Installing sand bins and ticket vending machines, furnished by the Authority, including all accessories and incidentals shall be measures as a lump sum for Item No. 0270.000 Site Improvements.

D. No separate measurement or payment will be made for excavation and backfill for conduit trenches or foundations of benches, trash receptacles, sand bins and ticket vending machines, and ticket validating machines. All costs in connection therewith will be considered incidental to the items of work to which they pertain.

E. No separate measurement or payment will be made for foundations for benches, trash receptacles, sand bins, and ticket vending machines. Foundations shall include concrete, reinforcing steel, anchor bolts, grout, including all accessories and incidentals.

F. No separate measurement or payment will be made for duct banks connected to ticket vending machines. Duct banks shall include conduit, concrete, reinforcing steel, cable, power connections, all accessories and incidentals.

4.02 PAYMENT

A. Payment for Site Improvements shall be made at the contract lump sum price under Item No. 0270.000 Site Improvements.

B. Payment for Wood and Steel Benches shall be made at the contract price each under Item No. 1050.265 Wood and Steel Benches - Type B.

C. Payment for Trash Receptacles shall be made at the contract unit price each under Item No. 1098.010 Trash Receptacles – Exterior

D. Payment for Bicycle racks shall be made at the contract unit price each under Item No. 112.000 Bicycle Rack.

4.03 PAYMENT ITEMS

ITEM NO.	DESCRIPTION	UNIT
0270.000	SITE IMPROVEMENTS	LS
1050.264	WOOD AND STEEL BENCH – TYPE A	EA
1050.265	WOOD AND STEEL BENCH – TYPE B	EA
1098.010	TRASH RECEPTACLES – EXTERIOR	EA
1112.000	BICYCLE RACK	EA

14. SECTION 02901– RUBBER RAIL SEAL; delete and replace sub-section 3.01 with the following:

3.01 INSTALLATION

A. Construct rubber rail seal in accordance with the requirements of AREMA General Specification for Highway Grade Crossings over Railroad Tracks, except as modified herein.

B. Install rubber rail seal in accordance with the manufacturer's instructions and the approved installation procedure. Rubber rail seal must be held in place using 9" cut spikes only. Shorter spikes will not be allowed.

C. Rails shall be coated throughout the crossing length with coal tar.

1. Rails shall be entirely coated, excluding top and gauge face.

15. SECTION 03410– STRUCTURAL PRECAST CONCRETE; delete and replace the following sub-sections:

1.01 DESCRIPTION

A. This Section specifies precast structural concrete including light pole foundations and platform edge beams as shown on the Drawings.

4.01 PAY ITEMS

Item No.	Description	Unit
0262.825	PRECAST CONCRETE PLATFORM CURB	LINEAR FOOT
0330.950	LUMINAIRE STD. CONCRETE FOUNDATION	EACH

16. **SECTION 06150 – ROUGH AND FINISH CARPENTRY**; delete and replace sub-section 4.01 with the following:

4.01 PAY ITEMS

Item No.	Description	Unit
0613.050	Timber Platforms and Walkways	Lump Sum
0615.000	Carpentry	Lump Sum
1076.021	Passenger Shelter Remove and Reset	Each

17. **SECTION 09360 – MODULAR TACTILE SURFACES**, delete and replace sub-section 4.03 with the following:

4.03 PAYMENT ITEMS

Item No.	Description	Unit
0263.116	TACTILE WARNING STRIP	SF

18. **SECTION 09900 – PAINTING**; delete and replace sub-section 4.01 with the following:

4.01 PAY ITEMS

Item No.	Description	Unit
0990.100	PAINTING – EXTERIOR	LUMP SUM
1040.901	PLATFORM SAFETY EDGE MARKING	LINEAR FOOT

19. **SECTION 10400– FIBERGLASS SIGNS**; delete and replace sub-section 4.03 with the following:

4.03 PAYMENT ITEMS

Item	Description	Unit
1041.618	DIRECTIONAL SIGN SUPPORTS	EACH
1042.012	SIGNAGE	LUMP SUM
1042.017	PASSENGER INFORMATION DISPLAY SYSTEM	LUMP SUM
1042.100	SIGN REMOVE AND RESET	EACH
1260.010	SIGN/MAP PANEL	EACH

RESPONSES TO THE PROSPECTIVE BIDDER'S QUESTIONS

1. Reference Section 01020 Allowances. Allowance amounts for Pay Items listed in paragraph 1.02 A, B and D for telephone Relocation, Electric Company payments and Traffic Officer Services do not agree with their respective allowance items shown in the Schedule of Bid Prices on Page 15B (1). Please clarify.

   A. Section 01020 has been revised in this Addendum No.1.

2. Reference Section 01322 Construction Schedule, Paragraph 1.09. A (page 01322-8). "A fixed price not to exceed $3,000...." does not agree with the amount shown in the Schedule of Bid Prices on page 15B (1). Please clarify

   A. Section 01322.1.09.A.1 has been revised in this Addendum No. 1.

3 Reference Section 01520 Procedure for Work Vehicles paragraph 1.05.F (page 01520-2) and Section 01572 Limitations of Operations paragraph 1.06B. Please clarify if the Motormen will be provided and paid for by the Authority under the provision "...any other such personnel as may be required to ensure the safety of the Authority's operations will be provided by the Authority." as stated in Section 01572 or if the Contractor is responsible for this cost, please advise what hourly wage rate is to be paid for the MBTA Motorman required for this work.

   A. Section 01520 will be deleted in its entirety and replaced with the MBTA Special Instructions dated April, 2003 and attached as pages 17 through 30 of this Addendum No. 1.

4 Reference Pay Item 0271.112 Chain Link Fence Vinyl Coated Galvanized. Please clarify if this item of work is to be paid by the SF as indicated in the Schedule of Bid Prices on Page 15B (6) or by the LF as indicated in the Standard Specifications.

   A. Chain link fence will be paid by the square foot as per Pay Item 0271.112

5 Specification 02090 Page 33 references an Item No. 0212.153 LS for Remove Lead Paint. There is no such Item. There is Allowance Item 0212.152 Remove Lead Paint. Is this the Lead Paint Removal Item?

   A Lead Paint Removal when necessary shall be paid under Allowance Item 0212.152

6 Plan D-1 indicates that the Street Light Poles are to be R&R and the concrete base is to be raised. Is there a detail for raising the bases and how does the new conduit indicated on the Electrical Plan tie into the existing bases?

   A. All existing light poles and foundations are to be removed and disposed. New street light poles and foundations are to be installed.

7. Should there be an Allowance Item to pay for Flagman?

   A. There is a separate Force Account established by the Authority to pay for any required Flagmen.

8. Plan C-2 indicates that the proposed Construction of Mini High Platforms at Longwood Station should Match Existing Mini High Platforms at Brookline Station and that this constitutes all the information required to build the new Mini Highs?

   A. Refer to attached Sketch SKA-1 included as page 37 of this Addendum No. 1.

9. The Bid Items in the Schedule of Bid Prices should be checked against these referenced in the Specifications.

   A. The Bid Form has been revised and included as pages 38 through 50 of this Addendum No.1.

10. Specification Section 02901 paragraph 3.01.C references Section 02900, which cannot be found in either the Contract Specs or the MBTA Standard Spec.

    A. Delete reference to Section 02900

11. Drawing C-8, Section 1 shows precast edge being 2'-0" wide. Note under section heading 1 states precast is 2'-4" wide. Which is correct?

    A. 2'-0" is the correct dimension

12 In Section 14561 pages 1-4 4.01A. This states that the Contractor shall furnish and install the manual lifts. On Plan C-18 note #11. This states that the lifts are provided by the MBTA and shall be returned to them on completion.

    A. Delete Note #11 on Plan C-18. The Contractor shall furnish and install the lifts.

13. Is there to be new communications systems on this project? On Plan D-1 Brookline Village dated 3-9-07

    Notes:

    17. States that the Contractor is to remove the existing public address cabinet, conduit, cables prior to activating the new public address equipment to be installed under this contract
    18. Install ¾" conduits from communications bungalow to existing poles for new public address speakers
    19. Install ¾" conduits from communication bungalow to existing poles to middle of inbound and outbound platforms and Charlie Card building for passenger assistance phones.
    20. Install ¾" conduits from communications bungalow to existing poles to middle of inbound and outbound platforms and Charlie Card building for variable message signs.
    21. Contractor is responsible for coordination with Verizon to install a new Verizon demark into Comm. Bungalow.

    There are similar notes on the Longwood D-2 plans as well. There isn't any communications spec's for variable message signs or PA system.

    A. Delete Note 17 on Drawing D-1and Note 16 on Drawing D-2. The existing communications systems are not to be disturbed under this contract. Contractor is to install conduit only for future use by others.

14. On Plan E-2

1. I don't see any handholes for the pole lighting conduit system. On the other plan they have one on each side of the tracks with a cross track conduit system with a detail id as B-B.
   The inbound system has no way of connecting to the outbound system.

2 The type B-B conduit detail on Plan E-1, is this only for track crossing of the lighting conduit system? Or is it used as a double conduit system throughout the conduit lighting system light to light? Please note that also on plan E-1 the typical light pole foundation detail indicates the conduit system as only having one conduit in and one conduit out at each pole base.

A. See attached Sketches SKE-1 and SKE-2included as pages 35 and 36 of this Addendum No. 1.

APPENDIX 1

MBTA SPECIAL INSTRUCTIONS
APRIL 2003

Table of Contents

LETTER OF TRANSMITTAL REGARDING SPECIAL INSTRUCTIONS 18

1. ACCESS TO AUTHORITY PROPERTY 18

2. INSURANCE REQUIREMENTS.....22

3. SUBMITTAL OF SPECIFICATIONS, DRAWINGS, DESIGN AND METHODS OF CONSTRUCTION.....22

(Applies to non-MBTA Construction Contracts. MBTA Construction Contracts are covered under Division I).....22

4. OPERATIONAL RESTRICTIONS 23

5. PROTECTION SERVICES 26

6. ANNUAL CERTIFICATION OF HI-RAIL EQUIPMENT 28

LETTER OF TRANSMITTAL REGARDING SPECIAL INSTRUCTIONS

The Subway Operations, Bus Operations, Safety, Systemwide Maintenance & Improvements, Operations Support, and the Design and Construction Departments of the MBTA have determined that certain limitations regarding Contractor's activities are required while working on a construction project.

These Supplementary Conditions are included herein to augment the MBTA Standard Specifications, Division 1 – General Requirements, Section 00700 - General Conditions, Article 6 – Prosecution and Progress, Paragraph 6.04 - Limitations of Operations with additional information, which is applicable to construction projects.

However, for non-MBTA construction projects where Division I does not apply, such as in the case of rights to construct on MBTA property granted under a lease or license agreement, the enclosed Special Instructions are still applicable unless otherwise directed.

Contract drawings and specifications for non-MBTA construction projects, relative to all work that will be performed within or directly adjacent to MBTA property, must be submitted to the Authority's Chief Engineer of Design and Construction, Director of Subway Operations, Director of Bus Operations, Director of Systemwide Maintenance & Improvements, Director of Operations Support, Director of Safety, and the Director of Real Estate. The addresses and phone numbers are listed on the next page. The special instructions contain information to be complied with by the owner, contractors, and others associated with the project.

Applicable provisions of the special instructions plus additional requirements from other MBTA departments must be included in the contract specifications as instructions to the contractor when performing work on or adjacent to MBTA property. Permission to perform work on MBTA property will be granted by the Director of Real Estate only when contract plans and specifications are approved by the MBTA.

The enforcement of any of the following conditions shall not be construed as waiving any of the rights of the Authority in any of the other conditions of an MBTA contract.

A meeting to further discuss MBTA requirements may be arranged by contacting the offices of those listed in Article 1.a. and/or b. herein.

1. ACCESS TO AUTHORITY PROPERTY

A. For MBTA Contractors Only: An owner or Contractor who wishes permission to enter upon or perform work over, on, under or adjacent to Authority property shall submit to the offices of the Authority's Chief Engineer of Design and Construction, the Director of Bus Operations, the Director of Subway Operations, Director of Systemwide Maintenance & Improvements, Director of Safety and the Director of Operations Support, a request in writing, a minimum of forty-two (42) days prior to the owner or the Contractor's planned commencement of any of the above stated activities. Addresses of the above are as follows:

MBTA's Chief Engineer of Design and Construction
6th Floor
10 Park Plaza
Boston, MA 02116
617 222-3116

Director of Systemwide Maintenance & Improvements
500 Arborway
Jamaica Plain, MA 02130
617 222-5454

Director of Subway Operations
10th Floor
45 High Street
Boston, MA 02110
617 222-4554

Director of Bus Operations
10th Floor
45 High Street
Boston, MA 02110
617 222-3368

Director of Operations Support
10th Floor
45 High Street
Boston, MA 02110
617 222-5460

Director of Safety
2nd Floor
21 Arlington Avenue
Charlestown, MA 02129
617 222-4244

B. Non-MBTA Construction Contractors For Lessees or Licenses of the MBTA Only: An owner or Contractor who wishes permission to enter upon or perform work over, on,

under or adjacent to Authority property shall submit to the offices of the MBTA's designated representative for real estate listed below, a request in writing, a minimum of forty-two (42) days prior to the owner or the Contractor's planned commencement of any of the above stated activities. The designated representative will distribute plan sets to the above MBTA departments and will coordinate departmental approvals. Application forms and instructions for obtaining access to MBTA property can be obtained by visiting the designated representative's website listed below and selecting "MBTA" and "Licensing."

License Administrator
Transit Realty Associates, L.L.C.
20 Winthrop Square
Boston, MA 02110
617 482-2525
www.transitrealty.com

The designated representative reports directly to:

MBTA Director of Real Estate
5th Floor
10 Park Plaza
Boston, MA 02116
617 222-3255

C. Requests shall specify the name of the owner or the contractor, the reasons for entering the property, where the property will be entered, each individual location where work of a different nature is to be performed, the nature of such work, and the number of days, including time schedule, the owner or the contractor intends to remain on the property at each location. The Authority will process such requests and meet with the owner or contractor to work out a schedule and phasing for the work plus other arrangements including financial. The Authority shall request a list of the names of each individual who will enter upon or perform work on Authority property.

D. The owner or contractor shall notify the representative of the Design and Construction Department and the appropriate Operations Director at least seventy-two (72) hours prior to entering the property as agreed upon earlier with the Authority. The owner or contractor shall notify the Design and Construction, and Operations Departments immediately if the job is to be closed down unexpectedly and shall again notify the Authority as specified above when work will commence.

E. The owner or contractor shall make all necessary arrangements with the Authority before entering upon the property and perform the work in accordance with an MBTA approved work schedule. The owner or contractor shall not enter MBTA property or perform any work on Authority property without the presence of an assigned MBTA representative from the Design and Construction Department or the Operations Department who is responsible for monitoring the work of that owner or contractor for the Authority.

Working on Authority property without an assigned MBTA representative present shall be cause for immediate eviction from the property.

F. The owner or contractor must have in place a method of payment for all Authority support services such as flagging, training, work trains, power shut offs, etc., prior to commencement of any work. This will be processed through a written force account agreement between the Authority and the owner or contractor prior to commencement of work. Direct billing to contractors for Authority support services requires the contractor's authorized representative to agree in writing that the company will reimburse the Authority for those support services, including overhead and fringe benefits. Once the Authority receives the signed statement from the contractor, the General Accounting Office will open a reimbursable account for specific Authority department(s) to charge costs, and the contractor will be billed directly.

G. The work associated with this project, except as hereinafter expressly provided, will be done without interruption of or change in the regular work or operation of vehicles of the Authority. No work shall be done affecting the operations of vehicles or operations of stations until the contractor has submitted details of his procedures to the Design and Construction and the applicable Operations representatives thirty (30) working days prior to start of work and has secured written permission to proceed.

H. The Authority reserves the right to require work affecting the safety of the operations to be performed at prescheduled non-operating periods from approximately 1:30 a.m. to 5:00 a.m. daily (1:30 a.m. – 4:30 a.m. effective); 1:30 a.m. to 6:00 a.m. Sunday (1:30 a.m.-5:30 a.m. effective). The contractor will not be permitted to remain within the track right-of-way after 5:00 a.m. (6:00 a.m. Sunday). The Authority may, during emergencies or at times when the Authority work forces are required to work in the area of the contractors work, order the contractor to cease work and remove his work forces and equipment from the property leaving the right-of-way in a safe operating condition. The Authority also reserves the right to stop or postpone any contractor's previously approved work if, in the Authority's opinion, such work is being performed in a manner that will endanger and/or delay the Authority's regular work or operations or compromise the health and safety of personnel working on the project.

I. The owner or contractor shall make their own provisions for electric power, compressed air, water, ventilation, and disposal of seepage water. No use of existing MBTA utilities will be permitted unless approved in advance by the Authority.

J. The owner or the contractor's attention is directed to other projects that will be ongoing simultaneously in the work area. The Authority will determine priorities for site access between this project and others.

K. The Authority reserves the right to deny the contractor access to the right of way because of operational requirements, adverse weather conditions or emergency track, signal, and power repairs. The contractor shall reasonably expect to be denied access to the site a total of 10 (ten) days per calendar year, this does not include the following holidays; New

Year's Day, President's Day, Patriot's Day, Memorial Day, Bunker Hill Day, Independence Day, Labor Day, Columbus Day, Veteran's Day, Thanksgiving Day, and Christmas Day. In addition, right of way access may be denied on days when various Special Events impact service as well as during Red Sox home games on the Green Line. Furthermore, the contractor shall also expect to have his access to the site delayed a total of 4 (four) times per month. Each delay shall be 60 (sixty) minutes or less. The contractor shall make allowances for these possible events in their bid. Due to increased stopping distances associated with slippery rail conditions, non-emergency access will not be allowed within ten (10) feet of the centerline of the track under adverse weather conditions.

L. The contractor shall perform his work at all times so as to cause no interruption of service during operating hours and shall at all times after performing work during either operating hours or non-operating hours leave the Authority's property in a clean and safe operating condition.

M. On occasion, the Authority will operate work cars, test trains, security trains, and/or hi-rail vehicles in the area of the work. At no time during these occurrences will the contractor be allowed to work on the right-of-way, except with the approval of the Authority or the Authority personnel providing protection services as defined in Protection Services.

2. INSURANCE REQUIREMENTS

A. The owner or Contractor's for MBTA Construction Contracts insurance requirements shall conform to the latest version of MBTA Standard Specifications, Division 1 – General Requirements, Section 00700 - General Conditions, Article 5 - Legal Relations and Responsibility to the Public, Paragraph 5.04 - Insurance Requirements. Owners or Contractors under a lease or license agreement with the MBTA shall provide insurance in accordance with the requirements of said agreement.

3. SUBMITTAL OF SPECIFICATIONS, DRAWINGS, DESIGN AND METHODS OF CONSTRUCTION

(Applies to non-MBTA Construction Contracts. MBTA Construction Contracts are covered under Division I)

A. An owner or contractor or others performing a non-MBTA construction contract that requires performing construction over, on, under or adjacent to the Authority's property shall submit to the Safety Department (one set), Design and Construction Department, and to the appropriate Operations Department two (2) sets each of contract drawings and specifications at the 30%, 60%, 90% and 100% phases of design of the project. 100% drawings and specifications must be submitted forty-two (42) days prior to the planned commencement of any work.

B. The contractor's drawings and specifications shall define the work in detail and a Professional Engineer registered in the Commonwealth of Massachusetts shall stamp the final drawings. The contractor or owner shall also submit a crane or heavy equipment location, if used, with dimensions to the face of abutments and structures and calculations of crane equipment loading on Authority structures showing no adverse effect on any structures. All calculations shall be stamped by a Professional Engineer registered in the Commonwealth of Massachusetts. The drawings must include any excavation support systems, shoring, underpinning, protective shielding, or any work required for the protection of MBTA property. This notification must be presented to the Safety Department at least 48 hours prior to the arrival of any heavy equipment.

C. Unless otherwise agreed to in advance, the owner or contractor's structures shall not attach to, be placed against, pass through, or impose any loads upon any structures or facilities owned by the MBTA.

D. All construction work shall be performed in strict conformity with final plans and specifications that have been reviewed and approved by the MBTA. Any changes requested by the owner or contractor which affect MBTA property or operations must be submitted to the MBTA for review and approval at least 30 days prior to the planned commencement of the work. Approvals or rejections shall be submitted by the MBTA within thirty (30) days following submission to the MBTA for review.

E. The owner or the contractor performing construction work over, on, under, or adjacent to Authority property shall submit to the Director of Design four (4) sets each of the design, drawings and specifications of any earth support system, shoring, underpinning, protective shielding, or any work required for the protection of the Authority's facilities and property, a minimum of forty-two (42) working days prior to the planned commencement of any of the above work. The design, drawings and specifications shall define in detail the methods of construction and materials to be used. The design and drawings shall be stamped and signed by a Professional Engineer registered in the Commonwealth of Massachusetts.

F. Unless otherwise agreed to in advance, earth support structures or shoring systems shall not be attached to any structure owned by the MBTA, nor shall MBTA structures be use to support loadings or be used for excavation support.

G. Engineering drawings of MBTA structures are available for reference or duplication at the MBTA Plan Room, 500 Arborway, Jamaica Plain, MA 02130. For information call the Technical Librarian at 617-222-5285.

4. OPERATIONAL RESTRICTIONS

A. The owner or contractor is made aware that the work will be performed adjacent to or over operating tracks, signal lines, communication lines, power lines, cables and other facilities belonging to the Authority. The owner or contractor is to take all due precautions to protect the Authority's facilities, utilities, and operations during the course of his work. When in the opinion of the Authority's Chief Engineer of Design and

Construction, Director of Safety, Director of Subway Operations, Director of Systemwide Maintenance & Improvements, Director of Operations Support, or their representatives, the contractor's work would cause hazard to the Authority's facilities, infrastructure, or to the safe operation of the transit system, the Authority will assign qualified personnel deemed necessary to protect the property, facilities and operations, all at the expense of the contractor.

B. The contractor is specifically prohibited from conducting any operations next to or over the right-of-way that have the potential to adversely impact the operations of Authority revenue service during normal operating hours (approximately 5:00 a.m. to 1:30 a.m.). Certain work adjacent to the right-of-way, described below as hazardous work, may take place during restricted revenue hours at the discretion of the Chief of Orange, Red, Green, or Blue Line Operations as applicable and require flagmen present.

C. Access to the MBTA right-of-way, which encompasses all MBTA property (fence to fence, wall to wall, and property line to property line over which Authority vehicles operate, including sidings and yards), is contingent upon Owner or Contractor compliance with the "MBTA Right-of-Way Safety Rulebook" that outlines Right-of-Way Safe Practices for Access on or Near the Right-Of-Way.

As specified in the Right of Way Safety Rulebook, all persons who access the MBTA right of way must attend a one-day, eight-hour training class conducted by Subway Operations **Training** and the Safety Department. Attendees must successfully complete the Right of Way Safety Training in order to receive a Right of Way license. The license is valid for a two-year period after which the person must attend the Authority's Right of Way re-certification class. To register for the "Right of Way Safety" class, contact:

Supervisor and Chief Rules Examiner of Training
Cabot RTL Training
275 Dorchester Avenue, 2nd floor
South Boston, MA 02127
Telephone: (617) 222-5377

In addition to this training, all contractors and subcontractors will attend a four-hour Contractor Safety Awareness Class provided by the Safety Department at a location to be determined by the Authority. Recipients of the Contractor Safety Awareness Class will receive a certificate of completion along with a sticker for their hardhat and will be valid for three years from the time of receipt. The cost of this class will be $50. To register for this class, contact:

Assistant Director of Safety
21 Arlington Avenue, Building 2
Charlestown, MA 02129
Telephone: 617-222-1978

D. The Authority will consider the property; facilities and operations fouled or subject to hazard when the following occurs:

1. When any object or operation is or can be brought nearer than ten (10) feet to the centerline of an operating track.
2. When an object or excavation is brought nearer than four (4) feet to a signal or communication line.
3. When an object or excavation is brought nearer than ten (10) feet to a power line or cable.
4. When explosives are used in the vicinity of the premises. Explosives shall not be used on or adjacent to the Authority's property or facilities without written consent of the Authority's Chief Engineer of Design and Construction and then shall be used only by a licensed blaster, licensed in the Commonwealth of Massachusetts, at times and under conditions acceptable to the Authority.
5. When cranes, trucks, power shovels, pile driver or any other equipment are working in positions that failure with or without load could occur nearer than 10 feet to the centerline of an operating track.

It shall be the responsibility of the contractor to inform the Director of Safety, Chief of Orange, Red, Green, or Blue Line Operations as applicable in writing thirty (30) working days prior to all times when they intend to perform hazardous work as described above. Submittal must include a site plan, the reasons for entering the property, where the property will be entered, each individual location where work of a different nature is to be performed, the nature of such work, and number of days, including time schedule, the contractor intends to remain on the property at each location. Failure of the contractor to provide the appropriate Line Chief with the specified advanced notice of hazardous work will result in the stoppage of work by the Authority.

D. The Contractor will be allowed on the right-of-way only after normal revenue service (approximately 1:30 a.m. to 5:00 a.m.). On occasion, the Authority will operate work cars in the area of the project work during non-revenue hours. At no time during these occurrences will the contractor be allowed to work on the right-of-way except with the approval of the Authority. The contractor shall coordinate their schedule at least twenty-four (24) hours in advance with the Authority.

E. No weekday/weekend transit service interruptions will be allowed on this project. The contractor must schedule all work requiring a shutdown of revenue service and/or station and/or platform operations during non-revenue hours.

F. Prior to the contractor leaving any work site, at the completion of each workday, the contractor shall ensure that the site is in proper condition to permit normal transit operations to resume. If, in the opinion of the Authority, the site is not suitable for normal transit operations due to conditions caused by the contractor, the Authority will allocate a suitable number of personnel to rectify the site. The owner or his contractor shall be charged full costs of such personnel and necessary equipment, including the full cost of replacement services during the cleanup period.

G. In the event that the contractor does not adhere to the work period limitations of the special conditions and causes delay in returning the right-of-way to revenue service at the end of

any work period, the owner or his contractor shall pay the Authority for substitute bus service a sum not to exceed $120.00 per hour per bus for the entire duration of the delay and including mobilization and demobilization of the bus service. The minimum charge shall be (3) hours per bus per delay. The owner or the contractor will reimburse the Authority for the hourly costs of personnel used during such delays (e.g., supervisors, officials, gatepersons, flagpersons, and automotive). The required number of buses to adequately accommodate all Authority customers who are inconvenienced by the delay shall be at the sole discretion of the Authority's Bus Operations Department. Whatever sum of money may become due and payable to the Authority by the owner or his contractor under this article may be retained out of money belonging to the contractor in the hand and possession of the Authority. This article shall be construed and treated by the parties to the contract not as imposing a penalty upon the contractor for failing fully to complete the work within the periods as specified herein, but as liquidation damages to compensate the Authority for additional costs incurred by the Authority because of the failure of the contractor to fully complete said work within the work periods specified.

H. The contractor shall assume full responsibility for the safety of all their work. They shall perform the work in a manner that will ensure the safety of both personnel and property. The contractor shall prevent against safety hazards, and the exposure of persons and equipment to hazardous and/or potentially hazardous conditions. All work in the construction of the project shall comply with the requirements of the Authority, Department of Labor, Occupational Safety and Health Administration (OSHA) provisions, as well as those of state and local regulations. Safe breathing levels must conform to the Massachusetts Department of Environmental Protection (DEP) standards. In the case of conflict of regulations, the most stringent will apply. If the standards are not met, the Authority has the right to stop the work until such time as the contractor is in compliance with standards.

5. PROTECTION SERVICES

A. When the contractor is performing work in the vicinity of Authority rights-of-way or public areas, the Authority will require the contractor to have at the site such authorized and qualified personnel as may be required to adequately protect the Authority's customers, employees, property, facilities and operations from hazardous conditions.

B. The need for protection services is outlined and described in the Authority's Right-of-Way Safety Rulebook. The appropriate Line Chief, or their representative, shall determine what protection services are required and assign flagging personnel, officials, supervisors, coordinators or any other such personnel as may be required to ensure the safety of the Authority's operations. Personnel shall be provided from the Authority's workforce in such numbers as the Line Chief determines. Costs for all protection services and supplies shall be the responsibility of the owner or contractor. No work will be allowed if flagmen are required, but not on duty.

C. When it is determined that protection services are required, the contractor must notify the Authority twenty-four (24) hours in advance and before 10.00 a.m. on the workday preceding the day that protection services will be required. Requests for protection services for weekends and/or holidays, must be made on the preceding Friday before 10.00 a.m., or before 10.00 a.m. on the workday preceding the holiday.

Requests for protection services for Non-Operating hours 1.30 a.m.–5.00 a.m. and in order for the work to be included on the Night Orders you must contact the:

Planning and Scheduling Coordinator
Maintenance of Way
617-222-5419.

Requests for protection services for Operating hours 5.00 a.m.-1.30 a.m. and in order for the work to be included on the Day Orders, you must contact:

Orange, Red, Green, or Blue Line Superintendent as applicable.
617-222-5085 (Orange); 617-222-5099(Red);
617-222-5982 (Green); 617-222-5532 (Blue).

It will be at the sole discretion of the Authority whether the contractor will be allowed to perform work on any particular day or night.

D. The contractor will be required to provide each flagperson on duty with properly functioning safety equipment as approved by the Authority's Safety Department. This equipment includes but is not limited to: orange safety cones, red, yellow, and green flags, airhorns, hardhats, safety goggles, and hearing protection. The contractor will not be allowed on or adjacent to the right-of-way if flagging personnel are not equipped with required safety personal protective equipment.

E. The contractor will supply properly functioning Authority-frequency portable radios to each flagperson on duty on a daily basis. The contractor will be responsible for storing and maintaining radios throughout the life of the contract.

F. All workers employed by the contractor who are to work within the Authority's stations, track area, right-of-way or adjacent to the traction power system or any high voltage electrical cables, shall be required to attend a safety awareness course at the Authority's Subway Operations Training School. The course is to make the contractor's personnel aware of the particular hazards related to the Authority's operations.

G. All personnel working on the project site in the immediate vicinity of, or within the right-of-way, are required to wear orange reflective safety vests, similar to standard Authority equipment as specified in the Right-of-Way safety Rulebook.

H. Work activities necessitating the traction power system (third rail and catenary) de-energization will require the services of an Authority power lineperson on site at all times and the contractor is responsible for any costs incurred by the Authority as a result of this action.

I. Prior to the implementation of the contracted work, and throughout the life of the contract, the contractor will be required to supply professionally rendered signs, as directed by the Authority's Marketing Department. These signs will include, but are not limited to, the following:

1. Informational signs for revenue service diversion.
2. Station directional and stairway, platform, exit closing signs.
3. General project informational signs for Authority customers.

J. Upon the direction of the Authority's Chief Engineer of Design and Construction, Director of Safety, and Director of Subway Operations or their representatives, the contractor will be required to supply and install partitions and wooden barricades to cordon off the work site; such partitions and barricades shall be maintained and remain graffiti free by the contractor for the duration of the project.

K. Upon direction from the Authority's Chief Engineer of Design and Construction and / or Director of Subway Operations or their representatives, the contractor will supply the following when site conditions warrant:

1. Emergency and temporary lighting.
2. Exhaust fans of sufficient size and numbers to adequately ventilate the work site, tunnel and /or adjacent stations.
3. Fire and / or garden hose for the purpose of dust control.

L. It shall be the responsibility of the contractor to keep the Authority informed prior to all times when they intend to perform hazardous work. Failure of the contractor to provide the Authority with suitable advance notice of hazardous work will result in the stoppage of the work by the Authority until such time as sufficient numbers of protection personnel are on duty at the site.

6. ANNUAL CERTIFICATION OF HI-RAIL EQUIPMENT

A. All equipment used by the contractor on Authority property shall be inspected by the Maintenance of Way engineer and/or the MBTA safety Department for clearance and safety standards, and shall not be used if considered unsafe. All contractor/ subcontractor equipment (including hi-rail) operators must be trained, certified, and properly licensed. Documentation of same must be readily available and provided to the Authority upon request. If the contractor equipment is involved in a derailment or near miss incident or an accident, which caused injury or exposed personnel to injury and/ or caused damage to Authority property, that equipment will be subject to the Impound Policy/ Procedure.

B. Contractor equipment to be used on or in the vicinity of the track shall be in first class condition, so as to positively prevent any failure that would cause delay in Authority operations or damage to its property or compromise the health and safety of personnel

working on the project. Equipment shall not be placed or operated within the fouling distance of track without first obtaining the permission of the Authority.

C. The contractor shall not, at any time, operate equipment or machinery over Authority's right-of-way without the use of hi-rail gear. All equipment that the contractor proposes to operate shall be modified to operate over the Authority's track and special work (e.g., switches, crossover frogs third rail, and restraining rail). Qualified Authority personnel shall control the movement of all hi-rail equipment at all times while operating on the Authority right-of-way. The contractor shall supply a portable radio for each hi-rail vehicle entering the Authority's right-of-way. No hi-rail equipment will be allowed on Authority's property without a functioning portable radio tuned to an Authority frequency.

D. The contractor shall furnish hi-rail equipment capable of operating within the strict confines of the right-of-way. No Authority owned equipment is available for the contractor's use. In addition to equipment necessary to complete the work on a regular basis, the contractor shall be required to have on site sufficient standby equipment capable of: a) removing disabled equipment from the right-of way, and b) replacing disabled equipment in order to return the right-of-way to normal operating status by the end of the designated work period. As part of the pre-qualification statement, the contractor shall furnish an itemized list of all equipment to be used on the project, including:

1. Type of equipment (e.g., pickup, flatbed or dump trucks, excavator, cranes, etc.).
2. Make, model and date of manufacture.
3. Ownership.
4. Present use and date of availability.
5. Location where equipment may be inspected by Authority personnel during the pre-qualification period.

E. The contractor shall have proof of competency for hi-rail operators (e.g., documentation that the operator of hi-rail equipment is certified to operate that specific piece of equipment). The Authority reserves the right to review the lesson plan and audit the training class. The hi-rail operator will be responsible for ensuring and documenting that the vehicle is safe for operation and that all required equipment is present and properly secured. This must be done on a daily basis prior to operating the equipment.

F. The contractor is required to have an Annual Certification of hi-rail equipment (separate form the Registry Inspection) signed by a competent person (e.g. Manufacturer's representative) asserting to the fact that the equipment is Original Equipment Manufacturer (OEM), that it conforms to the latest standards, was installed per the manufacturer's specification, and is functioning properly.

G. The contractor must keep a copy of the Manufacturer's Operating Manual or instructions onboard the hi-rail equipment at all times.

H. The operator shall operate the hi-rail equipment at a reasonable speed for the existing conditions, being alert for another vehicle (or any other obstruction along the right of way). In addition, said operator must maintain a safe spacing of traveling equipment.

I. The contractor's hi-rail vehicles must be equipped with a horn (warning device), and an exhaust gas purifier.

J. All equipment when used in tunnels and/ or darkness must conform to the Authority's standards for headlights and marker lights. In addition, when vehicles are operating in tandem such as rail carts, flat cars, etc., such vehicles must be equipped with a flashing/strobe light when the lead vehicle is other than the operating vehicle. Diesel powered equipment only will be allowed in the tunnel and shall be removed from the tunnel each night unless otherwise permitted by the Director of Subway Operations.

K. Contractors must comply with the Authority's Propane Gas policy.

L. Contractor's doing "hot work" must have appropriate permits and follow all applicable rules and procedures for same.

18. Work shall conform in all respects to plans and supporting data cited herein, unless otherwise conditioned in this Order of Conditions. No other changes shall be made without formal approval from the Conservation Commission. This Order of Conditions does not relieve the Applicant from complying with all other Federal, state and local laws and regulations.

19. The Applicant shall notify the Commission of any change required by other Boards or Commissions. Any change contemplated or required in the approved plans, cited herein, shall be submitted to the Conservation Commission for its review and approval prior to its implementation. If the Conservation Commission deems that a proposed change is major or substantial, a new public hearing may be required, or the Commission may direct the Applicant to file a new Notice of Intent.

20. No work in a Resource Area is permitted by this Order. No work within 100 feet of a Resource Area, other than that as conditioned herein, shall be permitted without the formal prior written approval of the Conservation Commission.

21. Issuance of these conditions does not in any way imply or certify that the site or downstream areas will not be subject to flooding, storm damage, or any other form of damage due to wetness.

22. Prior to the commencement of work on site:

a. or within 30 days of the issuance of this Order of Conditions if construction is not commenced, the Applicant shall record this Order of Conditions at the Norfolk County Registry of Deeds, and shall provide to the Commission an attested copy of this Order of Conditions showing either the instrument number or the Book and Page number evidencing recordation.

b. the Applicant or his/her agent shall provide to the Commission written notification giving the name, title, address and telephone numbers of the person or persons designated by the petitioner to be in compliance with the conditions of this Order of Conditions on site. An emergency telephone number shall also be provided in the event that action is required during non- working hours. Said notification shall be amended, as appropriate, over the course of the project, and submitted to the Commission at the time of or prior to any change.

c. the Applicant shall provide to the Conservation Commission copies of all other permits, variances, licenses or determinations which may be issued by other regulatory agencies, such as Special Permits, Site Plan Review permit, U.S. Army Corps of Engineers permit, Massachusetts Waterway License, etc.

d. erosion controls, consistent with Natural Resources Conservation Service Guidelines, shall be installed by hand and maintained so as to prevent sedimentation of Wetland Resource Areas for the duration of the project. These barriers shall include staked hay bales (two wooden stakes per bale, bound with organic twine), which shall be properly entrenched and backfilled to a depth of not less than 3 inches, and sediment filter fabric staked and backfilled. These erosion controls shall remain in place and be maintained until all upslope soils have been permanently stabilized, and the Conservation Commission has issued a Certificate of Compliance on the project or formally found the area to be stable and the barriers no longer necessary. The Applicant shall notify the Conservation Commission office when the controls have been installed.

e. the Project Supervisor in charge of day to day operations on site shall read this Order and sign a copy of each page, indicating that each and every condition has been read and understood. These signed pages shall be submitted to the Conservation Commission.

f. the Applicant shall provide to the Commission written notification of the intent to start work on site. Such notification shall be given not less than two nor more than five business days prior to the intended date of commencement of work. In the event that work ceases on the site for a period of time greater than five business days, this condition shall reapply prior to the recommencing of work at the site.

g. the limits of work shall be clearly marked in the field with surveyors tape, or plastic snow fence. This limit of work is to be maintained at all times during construction activity. No activity is to occur beyond this line without the prior written permission of the Conservation Administrator.

23. A copy of this Order of Conditions as well as copies of all plans, reports and supporting documents cited herein shall be available on site at all times while activities regulated by this Order of Conditions are being performed. In addition to the owner, all contractors and subcontractors shall be held responsible for compliance with this Order of Conditions.

24. The members and the agents of the Conservation Commission shall have the right to enter the site to verify compliance with this Order of Conditions and to require the submittal of additional data deemed necessary by the Commission for that verification. If it is determined that the project is not in compliance with this Order of Conditions, the Commission may require corrective action or may order the petitioner to cease and desist work on site.

25. All cuttings, debris, and other disposable materials from the project shall be taken off site for appropriate disposal. Records as to the destination of all materials, including stumps, excess fill and loam, removed from the site shall be kept on file and shall be provided to the Commission upon request.

26. During and after work on this project, there shall be no discharge or spillage of fuel, oil, or other pollutants onto any part of the site. The owner and contractor shall take all reasonable precautions to prevent the release of pollutants by ignorance, accident, or vandalism.

27. Any debris, sediment, or other materials that fall into or enter the wetlands shall be immediately removed by hand. The Applicant shall notify the Conservation Administrator should this occur.

28. The Conservation Administrator shall serve as the Conservation Commission's agent in all matters pertaining to the interpretation and the enforcement of the Order of Conditions.

29. Any tree removals associated with this project shall be done in manner that will not cause incidental damage to adjacent trees, shrubs, and ground covers. All debris from tree removal operations shall be removed from the site immediately.

30. This Order is issued under the Wetlands Protection Act, MGL Chapter 131, section 40, and may be deemed invalid by the Commission, if any of the information provided to the Commission during the Public Hearing is erroneous.

31. Immediately following the proposed contouring and grading, all exposed areas shall be loamed and seeded in accordance with Natural Resource Conservation Service Guidelines for permanent stabilization. In the event of unfavorable weather conditions, these exposed areas should be temporarily stabilized utilizing acceptable mulching materials and methods. Bark mulch shall not be considered appropriate measures for permanent stabilization of soil upslope of Wetland Resource Areas.

32. The MBTA shall attend a public meeting of the Conservation Commission in July of 2007 for the purpose of providing an update on the status of this project and to discuss any proposed modifications to the plan as approved.

33. Within six months of receiving designated funding for the design and construction of handicapped accessible ramps the MBTA shall complete a design for ramps to provide a connection to Riverway Park and submit a request for an amendment to this order to allow for construction of these ramps to the Brookline Conservation Commission.

34. This document shall be included in all construction contracts and subcontracts dealing with the work proposed, and shall not conflict with other contract requirements relating to this project.

35. The site contractor and Applicant shall be responsible for compliance with these conditions.

36. The Applicant shall immediately control any erosion problems that occur on site and shall also immediately notify the Commission.

37. The Conservation Commission reserves the right to require additional erosion controls if deemed necessary by the Commission or the Conservation Administrator.

38. All correspondence and submissions to the Commission regarding work under this Order shall have the DEP number clearly referenced. Any submissions not referencing these numbers may be deemed unacceptable.

39. Prior to requesting a Certificate of Compliance, the petitioner shall provide to the Commission the following:

a. completed WPA FORM 8A (Request for a Certificate of Compliance).

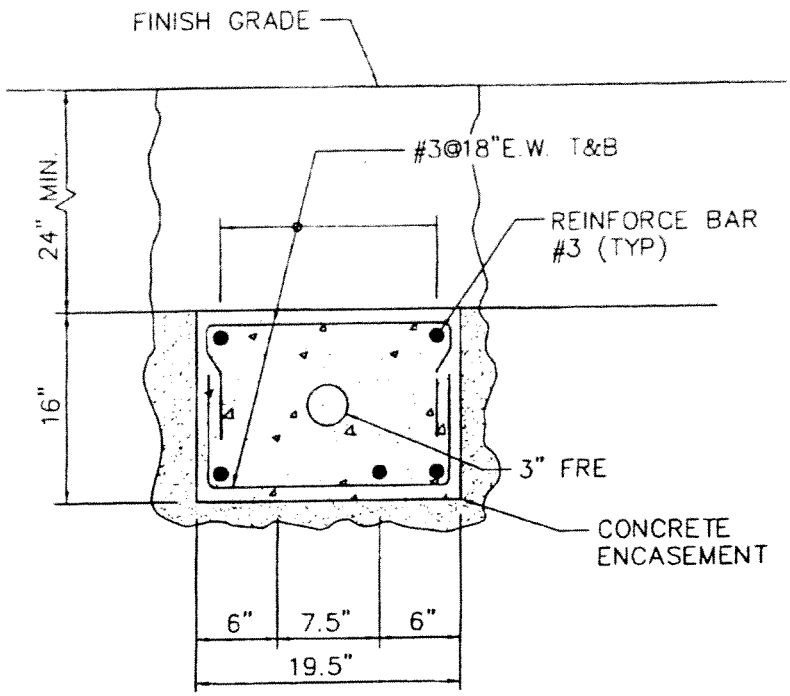
b. a written request, that a Certificate of Compliance/Final Release be issued, stating that the work has been satisfactorily completed as proposed and conditioned herein. The request shall state compliance with each condition of this Order of Conditions.

c. an as-built plan, based on an in-field survey, showing as-built grades. The plan shall be prepared, signed and stamped by a Massachusetts registered professional engineer or land surveyor and certified by said engineer or surveyor to be in substantial compliance with the plans approved in this Order of Conditions, and setting forth what deviations, if any, exist from the plans approved in this Order of Conditions. This as-built plan shall include all areas and structures within 150 feet of any Wetland Resource Area, as well as all other information shown on the plan approved in this Order of Conditions.

d. color photographs of the site, which shall show all altered areas under the jurisdiction of the Conservation Commission. The photographs shall be labeled, dated and keyed to a copy of the as-built plan for ready identification.

e. any additional information the Commission deems necessary for determining if a Certificate of Compliance/Final Release should be issued.

END



DUCTBANK SECTION "B–B"

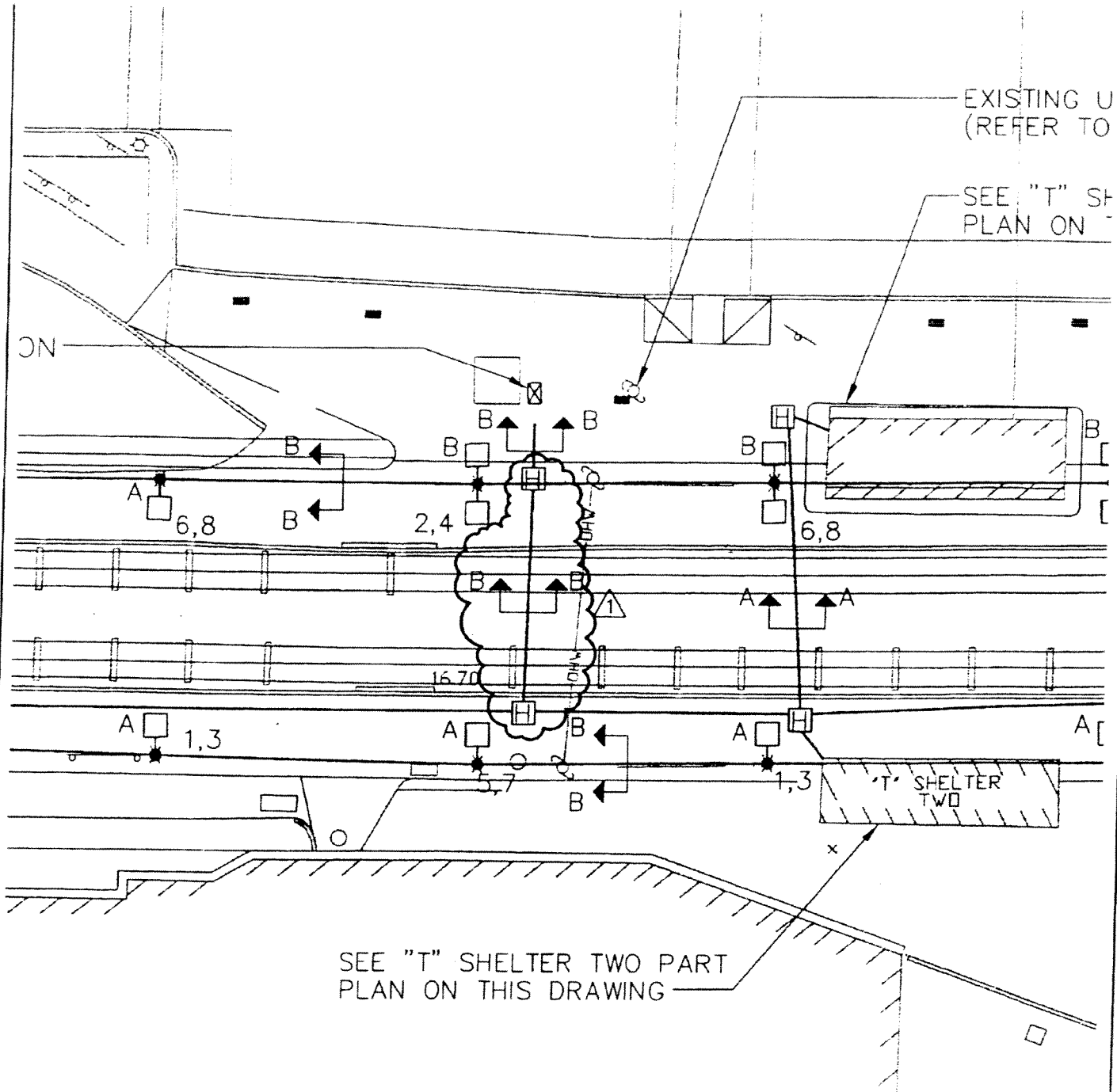
NOT TO SCALE

NOTE:

1. REFER TO CIVIL DRAWINGS FOR ADDITIONAL INFORMATION.

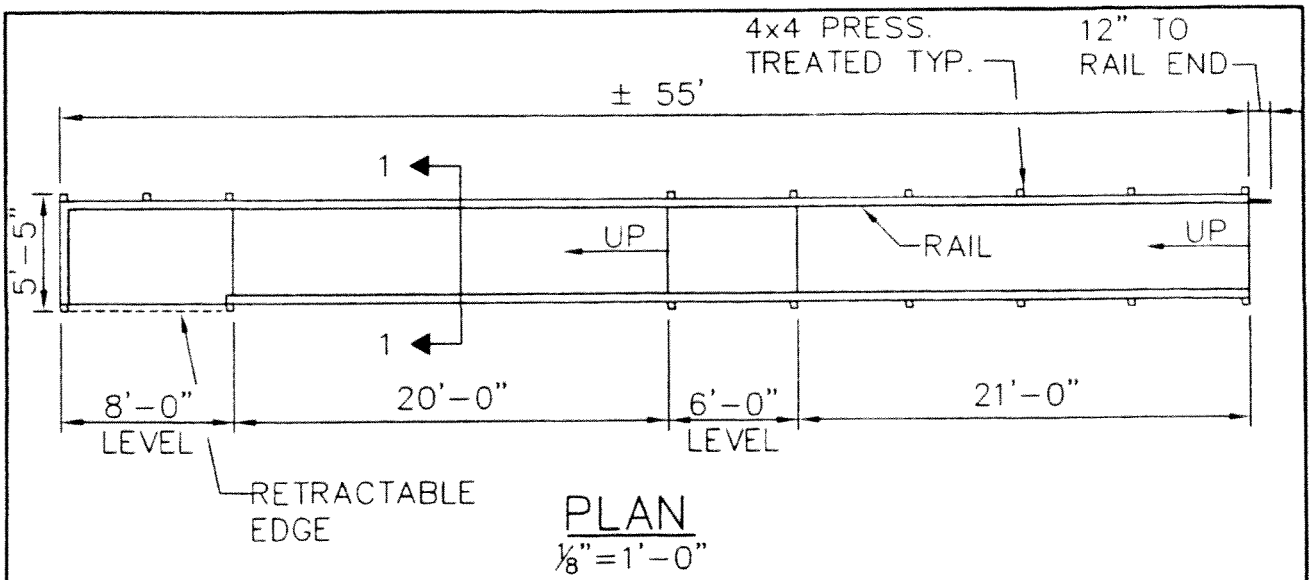
1

PROJECT NAME: BROOKLINE VILLAGE AND LONGWOOD STATION	SAR PROJECT: 27001.00	DRAWN BY: JAH	
SKETCH TITLE: DUCTBANK "B-B" REVISION		CHECKED BY: DL	
		SCALE: N.T.S.	
DRAWING REF: E-1	SAR Engineering, Inc.	DATE: 3-30-07	SKETCH No.: SKE-1

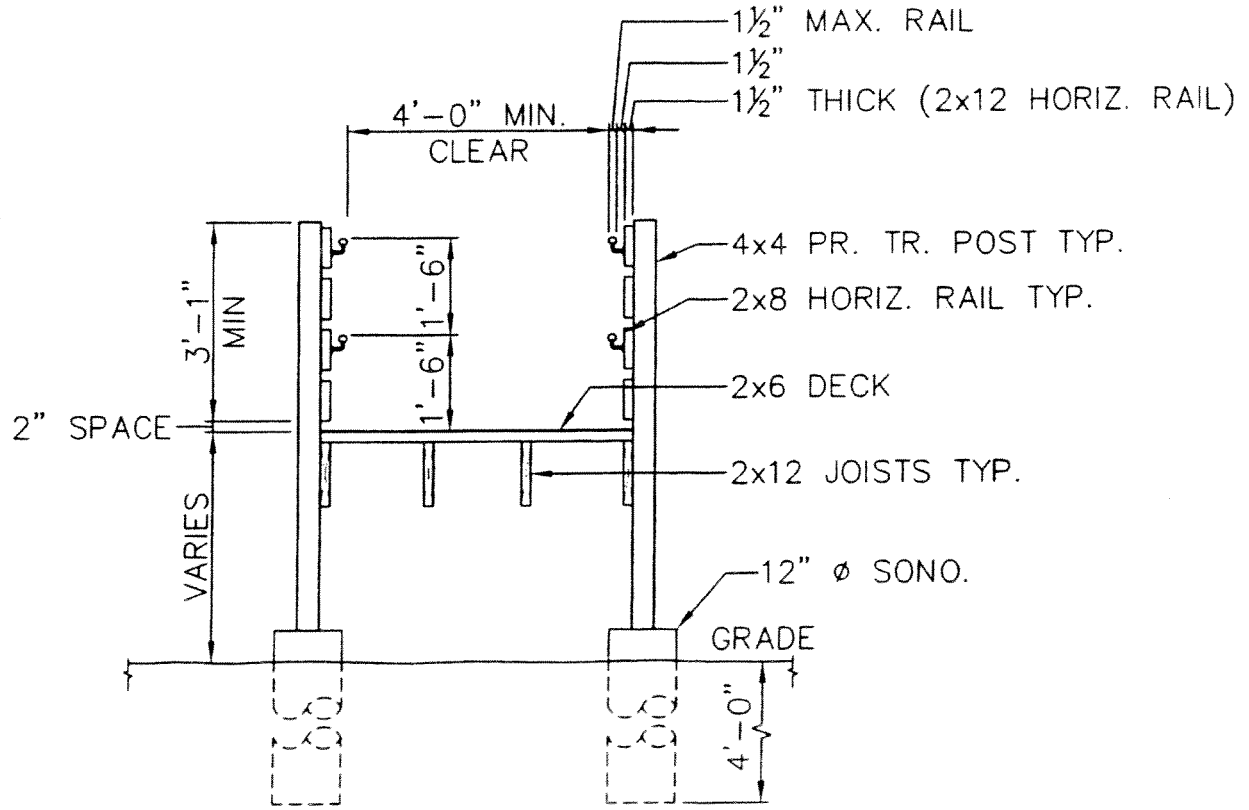


CONTRACTOR SHALL PROVIDE SEPARATE DEDICATED NEUTRALS W LIGHTING BRANCH CIRCUITS. COMMON SHARED NEUTRALS BE ALLOWED.

PROJECT NAME: BROOKLINE VILLAGE AND LONGWOOD STATION	SAR PROJECT: 27001.00	DRAWN BY: JAH	
SKETCH TITLE: DUCTBANK "B-B" REVISION		CHECKED BY: DL	
		SCALE: N.T.S.	
DRAWING REF: E-2	SAR Engineering, Inc.	DATE: 3-30-07	SKETCH No.: SKE-2



PLAN
1/8"=1'-0"



SECTION 1-1
3/8"=1'-0"

Project Name: LIGHT RAIL ACCESSIBILITY PROGRAM MBTA CONTRACT NO. A27CN02		Drawn By: RDG	
		Checked By: RGM	
Sketch Title: LONGWOOD STATION: HC RAMPS PLAN & SECTION		Scale: AS NOTED	
Drawing Ref: C-2	Gannett Fleming	Date: 3/30/07	Sketch No. SKA-1

J:\45406-Longwd-brookvil\Amend 19 - Longwood Sta\SKA-1 HC Ramps.dwg, ADD BORDER, 3/30/2007 4:02:19 PM

Massachusetts Bay Transportation Authority
Capital Management System
Schedule of Bid Prices
Contract A27CN02 Addendum: 1

Item Number	Description	Quantity	Unit Bid Price (written in words)	Unit Price	Amount
0110.002	CPM SCHEDULING	1.00	AT Seven hundred fifty dollars and zero cents	FP Fixed Price $750.00	$750.00
0130.110	FIELD OFFICE	1.00	AT	LS Lump Sum	
0130.430	TRAFFIC OFFICERS SERVICES	1.00	AT One hundred eighty thousand dollars and zero cents	AL Allowance $180,000.00	$180,000.00
0130.432	ELECTRIC COMPANY	1.00	AT Two thousand dollars and zero cents	AL Allowance $2,000.00	$2,000.00
0211.488	TELEPHONE RELOCATION	1.00	AT Twenty two thousand dollars and zero cents	AL Allowance $22,000.00	$22,000.00

Carried Forward:

Massachusetts Bay Transportation Authority
Capital Management System
Schedule of Bid Prices
Contract A27CN02 Addendum: 1

Item Number	Description	Quantity	Unit Bid Price (written in words)	Unit Price	Amount
				Brought Forward:	
0211.710	REMOVE AND REPLACE PASSENGER STATION PLATFORMS	1.00	AT	LS Lump Sum	
0212.135	REMOVE AND DISPOSE OF ASHPHALT/CONCRETE PAVEMENT	280.00	AT	CY Cubic Yard	
0212.152	REMOVE LEAD PAINT	1.00	AT Twenty two thousand dollars and zero cents	AL Allowance $22,000.00	$22,000.00
0221.212	FINE GRADING AND COMPACTION	1960.00	AT	SY Square Yard	
0222.003	UNCLASSIFIED EXCAVATION	330.00	AT	CY Cubic Yard	

Carried Forward:

Massachusetts Bay Transportation Authority
Capital Management System
Schedule of Bid Prices
Contract A27CN02 Addendum: 1

Item Number	Description	Quantity	Unit Bid Price (written in words)	Unit Price	Amount
				Brought Forward:	
0222.540	CATCH BASIN, MANHOLE OR LEACHING BASIN - ADJUST TO LINE AND/OR GRADE	2.00	AT _____	EA Each	
0222.571	COMPACTED GRAVEL SUBBASE	240.00	AT _____	TN Ton	
0222.596	3/4" CRUSHED STONE	60.00	AT _____	CY Cubic Yard	
0250.015	CLEAN CATCH BASINS AND MANHOLES	1.00	AT _____	EA Each	
0250.113	ABANDON CATCH BASIN	1.00	AT _____	EA Each	

Carried Forward:

Massachusetts Bay Transportation Authority
Capital Management System
Schedule of Bid Prices
Contract A27CN02 Addendum: 1

Item Number	Description	Quantity	Unit Bid Price (written in words)	Unit Price	Amount
				Brought Forward:	
0250.116	ADJUST UTILITY CASTINGS TO GRADE	1.00	AT _____	LS Lump Sum	
0261.115	SAW CUTTING BITUMINOUS CONCRETE	770.00	AT _____	LF Linear Foot	
0261.126	BITUMINOUS CONCRETE EXCAVATION BY COLD PLANE	215.00	AT _____	SY Square Yard	
0261.151	BITUMINOUS CONCRETE PAVEMENT	350.00	AT _____	TN Ton	
0262.150	GRANITE CURB	550.00	AT _____	LF Linear Foot	

Carried Forward:

Massachusetts Bay Transportation Authority
Capital Management System
Schedule of Bid Prices
Contract A27CN02 Addendum: 1

Item Number	Description	Quantity	Unit Bid Price (written in words)	Unit Price	Amount
				Brought Forward:	
0262.185	GRANITE CURB CURVED	70.00	AT _____	LF Linear Foot	
0262.249	STRAIGHT GRANITE TRANSITION CURB FOR PEDESTRIAN RAMPS	82.00	AT _____	LF Linear Foot	
0262.251	GRANITE TRANSITION CURB	60.00	AT _____	LF Linear Foot	
0262.701	CURBING - REMOVE AND RESET	480.00	AT _____	LF Linear Foot	
0262.825	PRECAST CONCRETE PLATFORM CURB	1130.00	AT _____	LF Linear Foot	

Carried Forward:

Massachusetts Bay Transportation Authority
Capital Management System
Schedule of Bid Prices
Contract A27CN02 Addendum: 1

Item Number	Description	Quantity	Unit Bid Price (written in words)	Unit Price	Amount
				Brought Forward:	
0263.116	TACTILE WARNING STRIP	2258.00	AT _____	SF Square Foot	
0270.000	SITE IMPROVEMENTS	1.00	AT _____	LS Lump Sum	
0271.004	REMOVE EXISTING FENCES	340.00	AT _____	LF Linear Foot	
0271.112	CHAIN LINK FENCE VINYL COATED GALVANIZED	1215.00	AT _____	SF Square Foot	
0271.955	CONSTRUCTION FENCE	500.00	AT _____	LF Linear Foot	

Carried Forward:

Massachusetts Bay Transportation Authority
Capital Management System
Schedule of Bid Prices
Contract A27CN02 Addendum: 1

Item Number	Description	Quantity	Unit Bid Price (written in words)	Unit Price	Amount
				Brought Forward:	
0271.956	CONSTRUCTION FENCE - REMOVE AND RESET	500.00	AT _____	LF Linear Foot	
0282.211	BALES OF HAY FOR EROSION CONTROL	130.00	AT _____	LF Linear Foot	
0282.401	WOOD CHIP MULCH	30.00	AT _____	CY Cubic Yard	
0284.100	TREES REMOVED - UNDER 24"	2.00	AT _____	EA Each	
0291.943	TIMBER EDGE BEAMS	555.00	AT _____	LF Linear Foot	

Carried Forward:

Massachusetts Bay Transportation Authority
Capital Management System
Schedule of Bid Prices
Contract A27CN02 Addendum: 1

Item Number	Description	Quantity	Unit Bid Price (written in words)	Unit Price	Amount
				Brought Forward:	
0330.950	LUMINAIRE STANDARD CONCRETE FOUNDATION	42.00	AT _____	EA Each	
0337.402	HANDICAP RAMP	5.00	AT _____	EA Each	
0451.020	ASPHALT BLOCK PAVING	7800.00	AT _____	SF Square Foot	
0590.000	HIGHWAY GUARD - REMOVE AND RESET	5.00	AT _____	LF Linear Foot	
0590.198	STEEL BEAM HIGHWAY GUARD - TYPE SS	15.00	AT _____	LF Linear Foot	

Carried Forward:

Massachusetts Bay Transportation Authority
Capital Management System
Schedule of Bid Prices
Contract A27CN02 Addendum: 1

Item Number	Description	Quantity	Unit Bid Price (written in words)	Unit Price	Amount
				Brought Forward:	
0613.050	TIMBER PLATFORMS AND WALKWAYS	1.00	AT _____	LS Lump Sum	
0615.000	CARPENTRY	1.00	AT _____	LS Lump Sum	
0849.000	WINDOWS	1.00	AT _____	LS Lump Sum	
0990.100	PAINTING - EXTERIOR	1.00	AT _____	LS Lump Sum	
1040.825	PLATFORM SAFETY EDGE MARKING	555.00	AT _____	LF Linear Foot	

Carried Forward:

Massachusetts Bay Transportation Authority
Capital Management System
Schedule of Bid Prices
Contract A27CN02 Addendum: 1

Item Number	Description	Quantity	Unit Bid Price (written in words)	Unit Price	Amount
				Brought Forward:	
1040.901	PAVEMENT MARKINGS	1010.00	AT _____	LF Linear Foot	
1041.618	DIRECTIONAL SIGN SUPPORTS	8.00	AT _____	EA Each	
1042.012	SIGNAGE	1.00	AT _____	LS Lump Sum	
1042.017	PASSENGER INFORMATION DISPLAY SYSTEM	1.00	AT _____	LS Lump Sum	
1042.052	PORTABLE BARRIER - TYPE III	2.00	AT _____	EA Each	

Carried Forward:	

Massachusetts Bay Transportation Authority
Capital Management System
Schedule of Bid Prices
Contract A27CN02 Addendum: 1

Item Number	Description	Quantity	Unit Bid Price (written in words)	Unit Price	Amount
				Brought Forward:	
1042.062	REFLECTORIZED DRUM WITH FLASHER	1200.00	AT _____	DD Drum-Day	
1042.089	SIGN AND SIGN SUPPORT REMOVED	2.00	AT _____	EA Each	
1042.100	SIGNS - REMOVE AND RESET	6.00	AT _____	EA Each	
1042.240	SAFETY SIGNAGE FOR CONSTRUCTION OPERATIONS	46.00	AT _____	SF Square Foot	
1042.870	SAFETY CONTROLS FOR CONSTRUCTION OPERATIONS	1.00	AT _____	LS Lump Sum	

Carried Forward:

Massachusetts Bay Transportation Authority
Capital Management System
Schedule of Bid Prices
Contract A27CN02 Addendum: 1

Item Number	Description	Quantity	Unit Bid Price (written in words)	Unit Price	Amount
				Brought Forward:	
1050.264	WOOD AND STEEL BENCH - TYPE A	15.00	AT _____	EA Each	
1050.265	WOOD AND STEEL BENCH - TYPE B	1.00	AT _____	EA Each	
1076.021	PASSENGER SHELTER - REMOVE AND RESET	3.00	AT _____	EA Each	
1098.010	TRASH RECEPTACLES - EXTERIOR	8.00	AT _____	EA Each	
1112.000	BICYCLE RACK	4.00	AT _____	EA Each	

Carried Forward:

Massachusetts Bay Transportation Authority
Capital Management System
Schedule of Bid Prices
Contract A27CN02 Addendum: 1

Item Number	Description	Quantity	Unit Bid Price (written in words)	Unit Price	Amount
				Brought Forward:	
1260.010	SIGN/MAP PANEL	56.00	AT _____	EA Each	
1440.301	MOBILE LIFT	4.00	AT _____	EA Each	
1600.150	SITE ELECTRICAL WORK	1.00	AT _____	LS Lump Sum	
				Subtotal:	
				Total Estimated Contract Base Bid Price:	